

# THE JOURNAL OF MEDICAL EDUCATION

OFFICIAL PUBLICATION OF  
THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

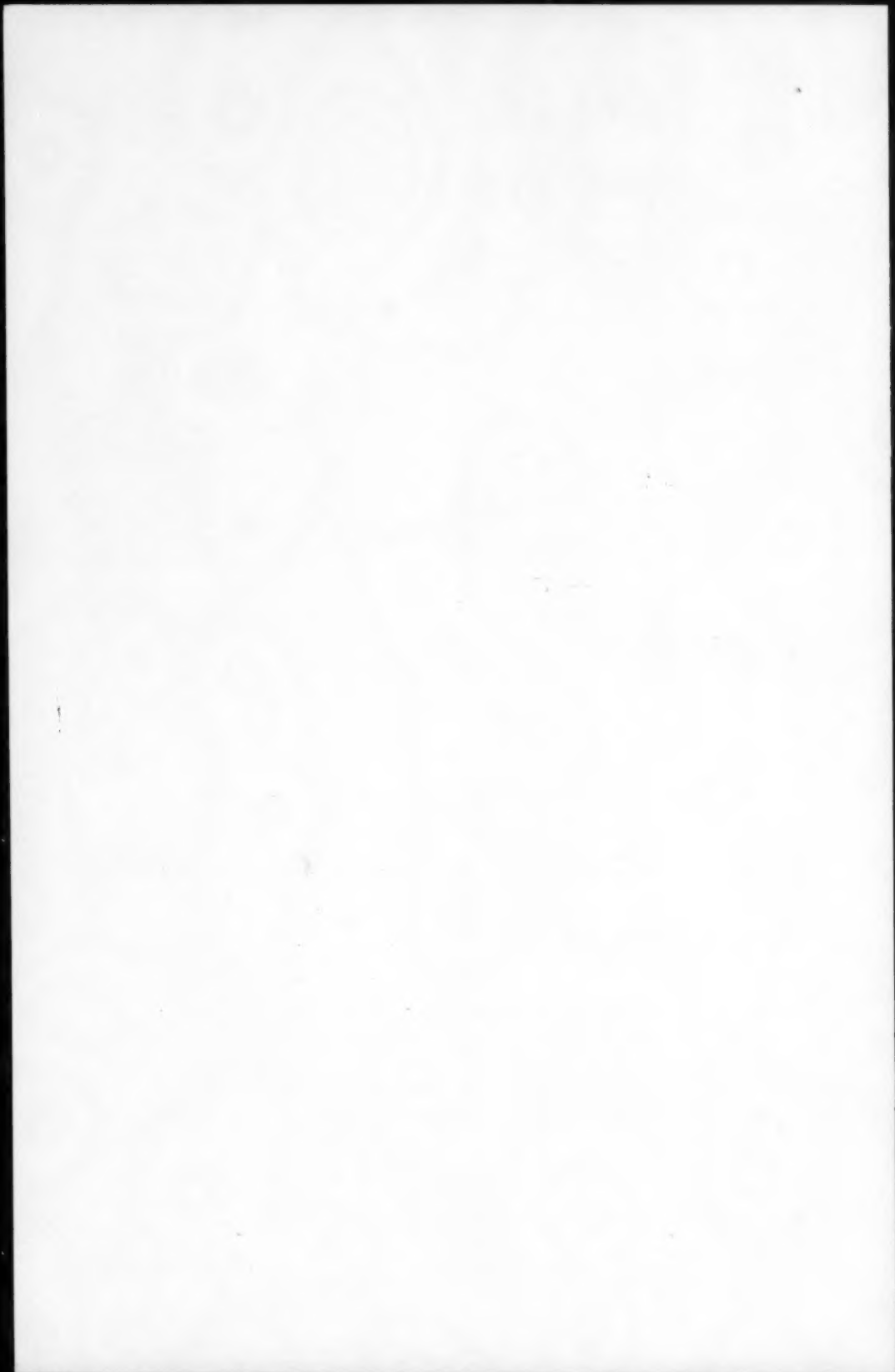


SEPTEMBER 1957 • VOLUME 32 • NUMBER 9

- Combined Teaching in Human Ecology.....Bakst & Malamud**  
**The Wisconsin Preceptor Program—  
A 30-Year Experiment in  
Medical Education.....Bowers, Parkin, Page, Anast**  
**Medical Education in Germany.....K. Holldack**  
**The National Intern Matching Program.....McJoynt, Crosby**  
**The Year of Internship.....M. Prywes**  
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# Table of Contents

VOL. 32 SEPTEMBER 1957 No. 9

WITH OUR AUTHORS .....	VII
ARTICLES	
Combined Teaching in Human Ecology —Henry J. Bakst and William Malamud .....	603
The Wisconsin Preceptor Program—A 30 Year Experiment in Medical Education —John Z. Bowers and Robert C. Parkin .....	610
An Alumni Evaluation of the Wisconsin Preceptor Program —Horace A. Page and Philip Anast .....	613
The Year of Internship —Moshe Prywes .....	618
The First Seminar on Medical Education in Colombia —Luis Borrero .....	625
Medical Education in Germany —K. Holldack .....	631
The National Intern Matching Program —Joan R. McJoynt and Edwin L. Crosby .....	635
EDITORIALS .....	641
NEWS AND COLLEGE BRIEFS .....	645
AUDIO-VISUAL NEWS .....	651
BOOK REVIEWS .....	660
PERSONNEL EXCHANGE .....	667

II

## The Journal of MEDICAL EDUCATION



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Dr. William Malamud is professor and executive director, division of psychiatry, Boston University School of Medicine. He received his M.D. from McGill University School of Medicine. This article is adapted from an address given at the 67th Annual Meeting of the Association of American Medical Colleges, November 12-14, 1956, Colorado Springs, Colo.

### Bowers, Parkin Page, Anast

*The Wisconsin Preceptor Program.* Dr. John Z. Bowers is dean of the University of Wisconsin Medical School, and chairman of the Association's Editorial Board. Dr. Robert C. Parkin is assistant to the dean of the medical school.

*An Alumni Evaluation of the Program.* Dr. Horace A. Page and Dr. Philip P. Anast are members of the department of psychology, University of Wisconsin. Both these papers were given at the 67th Annual Meeting of the Association of American Medical Colleges, November 12-14, 1956, Colorado Springs, Colo.

### Moshe Prywes

*The Year of Internship.* Dr. Prywes is associate dean of the Medical Faculty of Jerusalem, Hebrew University—Hadassah Medical School. This post includes the Postgraduate Division, the School of Dentistry and the School of Pharmacy. He was born in Poland and educated in France. Dr. Prywes was in charge of preventive care and rehabilitation programs for the Jewish population of postwar Europe, North Africa and Israel.

### Luis Borrero

*The First Seminar on Medical Education in Colombia.* Dr. Borrero is professor of physiology at Universidad del Valle Facultad de Medicina, Cali, Colombia.

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### K. Holldack

*Medical Education in Germany.* Dr. K. Holldack is with the Medical Polyclinic, University of Heidelberg. This article is reprinted from German Medical Monthly, Vol. 1, No. 10, October 1956.

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## ASSOCIATION OF AMERICAN MEDICAL COLLEGES

68th Annual Meeting, October 21-23,  
Chalfonte-Haddon Hall, Atlantic City, N. J.

American Medical Association—1958 Annual  
Meeting—June 23-27, San Francisco.

American Academy of Pediatrics—October 7-10,  
Chicago

International Congress of Psychiatry—Septem-  
ber 1-7; Zurich, Switzerland.

American Association of Gynecologists and Ob-  
stetricians—September 5-7; The Homestead,  
Hot Springs, Va.

World Medical Association—September 29-  
October 5; Istanbul, Turkey.

American Hospital Association—September 30  
October 3, Atlantic City, N. J.

## Index to Advertisers

Ames Co., Inc.	IV
Appleton-Century-Crofts, Inc.	III
Ayerst Laboratories	Inside Back Cover
Bausch & Lomb Optical Co.	650
Blakiston Div., McGraw-Hill Book Co., Inc.	Inside Front Cover
Burroughs, Wellcome & Co.	VI, 673
Cambridge Instrument Co.	674
Eaton Laboratories	V
Harvard University Press	XV
Lakeside Laboratories	XVI
Lea & Febiger	654
Lederle Laboratories	XI
J. B. Lippincott Co.	655, 658
Mead Johnson	Back Cover

Merck & Co., Inc.	665
C. V. Mosby Co.	664
National Dairy Council	657
Ortho	XIV
Oxford Press	668
Parke, Davis & Co.	670
Pfizer Laboratories	XIII
RCA	between 658 & 659
W. B. Saunders Co.	Front cover, I
Julius Schmid, Inc.	652
Smith, Kline & French Laboratories	XII
Taylor Instrument Co.	666
Warner-Lambert	659, 661
Williams & Wilkins Inc.	672
Year Book Pub.	662

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\*The American Foundation: Medical Research:  
A Midcentury Survey, Boston, Little, Brown  
and Company, 1955, vol. 1, p. XXXI.

\*\*Ibid., p. 600.



## Combined Teaching in Human Ecology

HENRY J. BAKST AND WILLIAM MALAMUD

Professor and chairman, department of preventive medicine; professor and executive director,  
division of psychiatry, Boston University School of Medicine

### Introduction

IN 1869, Ernst Haeckel proposed the term "ecology" in order to provide a framework for the extensive number of observations which had been made concerning the relation between animals and their environment. Since the word is derived from the Greek *oikos* meaning "house" or "place to live," ecology literally means the study of organisms "at home." Usually ecology is defined as the science of interrelations between living organisms and their environment.<sup>1</sup> The term was largely ignored by the zoologists for whom it was originally intended and was first used extensively by botanists. Although ecology corresponds to the older term of "natural history," it includes accurate and precise methods and is concerned with an attempt to reduce and coordinate into some scientific scheme the existing information on the habits, life histories, and numbers of different animals with a view toward solving some of the practical problems that develop as a result of interference with the normal processes of plant and animal

life through changes introduced by civilization. Some of the fields of knowledge required for the solution of problems in animal ecology, therefore, include medicine, zoology, climatology, history, demography, and ethnology. It is not surprising that man's interrelations with other animals is a major consideration in ecology since he is indeed a favored animal in a large community of others and is subject to many of the same influences.

The framework within which the organized data of animal ecology is coordinated rests upon three general concepts and procedures. The first is the ecological survey which involves the collection and listing of all species found in a particular area as well as a study and description of their habitat. The second is the concept of ecological succession or the orderly change of habitat from one into another. The third is that the character of any given community is always changing in a more or less periodic manner.<sup>2</sup>

It appears that many of the considerations dealing with problems of human health and disease could be

better understood by the coordination of the kind of information applied to animal ecology. Indeed this point of view has already been adopted and recognized under the term of social medicine.<sup>3</sup> Such a concept implies certain essential and inevitable steps in terms of organization. These are:

1. The integration of knowledge originating from a variety of special sources in medicine and human biology.
2. The establishment of centralized responsibility for the coordination of pertinent data.
3. A designated population to which the principles of ecology may be applied.
4. A community which in terms of social relationships and physical attributes permits sufficiently sharp delineation to serve as an area of investigation.

Given these considerations, it is not unreasonable to assume that a designated population group may be approached with a view toward developing a better understanding of underlying ecological principles, techniques and procedures which could be applied effectively in disease prevention and health promotion. Since major results in environmental control to date have been concerned essentially with infectious disease, this approach may bring to light information leading to the understanding and management of the entirely different nature of the problems which naturally follow when morbidity and mortality in the young are brought under reasonable control.

The activities which develop from such an avenue of approach show promise of being of value in terms of dealing with the already well-recognized problem of the steadily rising incidence of long term and disabling

disease and the better understanding of the issues involved in health maintenance and health protection in a civilized society.<sup>4</sup> These are matters of fundamental importance and relate directly to the current consideration of changes in the medical curriculum. Some of the changes which have been introduced and the experiments which have been undertaken have been met by enthusiasm in some quarters and criticism in others.<sup>5</sup> It is of interest, however, that many of these developments have a common core of similarity. Curriculum changes at Western Reserve, University of Pennsylvania, Cornell, Colorado, and Boston University, for example, although quite different in scope and content include joint or combined teaching, coordination of services and facilities, and are directed toward a broad and comprehensive understanding of the needs of the patient.

#### **Organization of the program**

At Boston University, the stimulus for the current development arose out of a number of related circumstances. For over 80 years, fourth-year medical students have been participating in a home care program through which medical care at home is made available for a population of some 55,000 residing in a square mile area surrounding the school of medicine and its main teaching source, the Massachusetts Memorial Hospitals. Usually, about 17,000 home visits are made to approximately 6,000 patients each year. Many racial origins are represented in this population group which includes the lowest income level of the city. The housing problems reflect the economic circumstances quite effectively, and there are present certain problems of particular health interest, such as a high



tuberculosis case rate, a high infant mortality rate and fairly frequent evidences of asocial behavior. Certain characteristics of the patient population are of pertinent interest. Over 60 per cent of the patients seen at home are under the age of 10 and about 35 per cent receive financial support from public and private welfare agencies. Of the total population, 13 per cent are 65 years of age or over and often live alone in rooming houses. For many years, students have had the opportunity to collect population data in this area, have participated in projects designed to study and control disease incidence, and have learned a good deal about the problems of patient management in the home.<sup>6</sup>

Another related circumstance is the fact that the fourth-year curriculum is divided into 12 periods of four weeks each. Pediatrics, psychiatry, obstetrics, and preventive medicine (home care) each have assigned one four-week period during the fourth year. It was apparent that if these assignments were to be made consecutively, cooperation by the four departments concerned would permit the establishment of a continuous 16 week program.

A third consideration depended upon interdepartmental cooperation and the establishment of a common area of interest and concern which would encourage joint participation and on which each department could bring to bear its special skills and knowledge in terms of patient care, education, and research. Such a common denominator appeared to be the area of *early growth and development*. In this mutual meeting ground are to be found interests of equal concern to obstetricians, pediatricians, psychiatrists, and teachers of preventive medicine.

The release of about six hours a

week by each department thus made it possible to establish a combined teaching program extending over a four-month period. This in no way altered the responsibility of any one of these departments for the teaching of its particular subject. The released time is used in a coordinated program of patient care focused on the total health needs of the individual and provides an opportunity to study the economic, social, emotional, and environmental influences which interact to influence body growth and personality development as well as health and adjustment of a population in a specified geographical area.

The principles upon which this program was based were:

1. The acceptance of the fact that environmental and psychological stresses play an important role in influencing the degree of adequacy with which adjustment in health and disease is made.
2. The belief that the understanding of the factors which influence the process of growth and development and human adjustment are of importance in medical education.
3. The emphasis on preventive medicine in the management of health problems through a comprehensive approach to patient care in which environmental, physical and emotional factors are brought into the consideration of individual, family, and community health needs.

It was decided to base this program at the Boston City Hospital which has a large obstetrical service with about 2,800 deliveries annually. The hospital provided a large ward adjacent to the outpatient department which served as a centralized area for the program, and activities began in June 1954. At this time, one-third of the fourth-year class students assigned to obstetrics, pediatrics, psychiatry and preventive medicine, reported to the ward which had been converted into offices, examining and conference rooms. Each student was

assigned a patient selected from the prenatal clinic whose delivery was expected to take place approximately four to six weeks after the onset of the program. These patients now made prenatal visits to what was soon to be referred to as the "ecology" ward. Examination under the supervision of an obstetrician during this period was coordinated with home visits by the medical student and a social worker. A detailed nutritional history was taken by a nutritionist. A series of interviews were held by the medical student under the supervision of the psychiatrist. These were aimed at developing information in regard to the understanding of personality adjustment and interpersonal relationships. The student was expected to be present at the delivery and was requested to follow the patient during the "lying-in" period. Complete examination of the newborn under the supervision of a pediatrician was also included and subsequent postnatal and well-baby visits were made on the ecology ward.

From the point of view of the doctor-patient relationship, these arrangements permitted the assignment of a patient late in the prenatal period to a medical student who would continue to follow this patient through the delivery and postnatal period as well as to observe the infant for the first 10 or 12 weeks of life. For the patient, this meant an association with an assigned student and his supervising personnel throughout the entire four-month period. It would appear that benefits in terms of continuity of care would accrue on both the teaching and service sides of the ledger. In essence the functions of a prenatal, postnatal, well-baby, pediatric and psychosomatic clinic were combined in a single area.

The 16-week period proved attractive for reasons other than those already noted. The department of psychiatry felt that the availability of the extended period of time would greatly enhance the benefits obtained from supervised psychotherapy by permitting students to follow assigned psychiatric patients for both evaluation and treatment through the entire 16 weeks rather than the previously available four-week period. The accomplishments of the students in terms of understanding and patient relationship as a result of this extended contact were both stimulating and exciting to observe. This development finally resulted in the establishment of a child guidance clinic on the human ecology ward.

In terms of actual operation, therefore, this program deals with one-third of the fourth-year class every four months. Student orientation, assignment of patients, and a discussion of objectives and requirements take place during the first week. A social worker is assigned to each quarter of the group of students (usually six) and is responsible for the management of the social problems which are brought to light as a result of the student's investigations. A nutritionist supervises the medical students in the evaluation of problems of nutrition. Psychological examinations of mothers and children are also performed. Through such collaborative information and by home visits and a complete history and physical examination the student obtains a broad understanding not only of the patient but the entire family as well.

Weekly conferences are held with the entire group of students and representatives of the four departments. On these occasions, students present problems of general interest for discussion. The initial group of

conferences deal with anticipated problems in pregnancy, preparation for delivery, and infant care. They then proceed to delivery and postpartum problems from the sixth to the tenth week. The following four weeks deal with the management of the infant at home, family attitudes and discussions of socio-economic and cultural factors as they relate to problems of health in the family. The final conferences are devoted to discussions centered around family needs.

One-quarter of the group of students are met daily by the combined staff. These meetings deal with the prenatal examination, information to be derived from patient interviews, preparation for the newborn in the first phase before delivery, and postnatal and well-baby follow-up after delivery. The principal function of these meetings is to bring together the special contributions of the four departments as they focus on the case material with which the students are dealing. Throughout these occasions as well as in the large weekly conferences, students are exposed to a diversity of thinking brought to the discussions by the joint participation of regularly assigned faculty personnel from obstetrics, pediatrics, psychiatry and preventive medicine, as well as the social worker, nurse, nutritionist and psychologist.

### Discussion

It has been said that programs such as these deal with considerations which are primarily not medical and that an attempt is being made to devalue the importance of medical science.<sup>7</sup> Medical education, however, has three fundamental and interdependent responsibilities. These are:

1. to provide a foundation of special knowledge and skill upon which

the practice of modern medicine rests,

2. to deal with the basic principles and concepts which characterize professional education and

3. to develop the character and understanding which insures the capacity to assume a professional responsibility with competence.<sup>8</sup>

For a student to learn the intricacies of the mechanics of congestive heart failure without awareness of the complex environmental, emotional and social factors which may influence the course of its proper management is to learn but only part of the problem and to be considerably less than scientific. The essential basis for the survival of the "healing art" has been its constantly increasing ability to meet a universal human need. The effectiveness with which medicine discharges the demand placed upon it by society is related to the degree of comprehension and understanding applied to meeting this need.

It may be of interest, therefore, to consider the salient characteristics of these patients who were chosen with only two restrictions as to eligibility, namely, that the expected date of confinement meet the requirements of the program and that the place of residence be located within the boundaries of the Home Medical Service.

The 68 patients assigned from June 1955 to May 1956 reveal that 55 multiparous and 13 primiparous patients had a median age of 24 with a range of 17 to 43 years. Eighteen per cent of the pregnancies among 27 white and 41 non-white patients were illegitimate. The mean level of formal educational attainment was 9.4 years and the average annual family income was \$2,300. Twenty different signs and symptoms ranging from edema and albuminuria to headache, visual disturbances and anemia were

noted 94 times. Three patients had rheumatic heart disease, two had pyelitis, one had cholecystitis, and another had a peptic ulcer.

Although 50 patients had what was described as a normal delivery, 18 patients or 26 per cent faced situations such as precipitous deliveries, abruptio placentae, caesarean section, and premature and partial separation of the placenta. Only 12 patients remained on a regular diet; 56 were placed on special dietary regimens of which a low sodium diet was the most common. Exactly 25 per cent of the patients developed post-partum complications consisting of urinary tract infection, cervicitis, endometritis, parametritis, mastitis, and post-partum hemorrhage. One-quarter of the newborn infants encountered difficulties on their introduction to the world including serious respiratory problems, congenital anomalies, jaundice requiring an exchange transfusion, and birth injury. One neonatal death occurred 12 hours after birth. It is self-evident that although no attempt was made to deal with other than an essentially normal situation, pathology was not to be avoided and, indeed, perhaps was characteristic of the population concerned. If overt evidence of mental and emotional disturbances is also included, then the completely healthy patient in terms of acceptable physical and emotional adjustment was the exceptional individual in this group. Emotional disturbances arose in association with a variety of circumstances, such as, mixed marriages, illegitimacy, superstitions and broken homes. Anxiety was evident as a result of fear of pregnancy, hospitalization or anesthesia, possible fetal abnormality or fetal death, and, in some cases, concern over possible ill effects of previous attempts to terminate the pregnancy.

### **Summary and conclusions**

It is reasonably apparent that the establishment of a combined teaching program dealing with the area of early growth and development from an ecological point of view presents many interesting and absorbing possibilities. The functions of four medical specialties were combined in a single geographic area and supervised by joint representation from obstetrics, pediatrics, psychiatry and preventive medicine. Patients were followed by assigned medical students in the hospital, the out-patient department, and at home in an attempt to deal comprehensively and continuously with the problems of health and illness which occurred in the designated patients and their families. While it is relatively early to predict the permanent benefits to be obtained from this project, it is clear that no serious disruption of the curriculum results from the procedure. Actually this provides an excellent opportunity for teaching specialties in a setting which emphasizes the close inter-relationships of the four different areas as they bear upon the common objective of the patient's welfare. Thus, fragmentation in teaching is considerably reduced and the patient is provided with rather obvious improvements in medical services. While difficulties in scheduling do result, these proved to be surmountable. The single outstanding difficulty is concerned with teaching content. In general, relatively little specific reliable data is available in terms of a body of knowledge which can be easily organized. Within the brief period of two years, however, the accumulation of data from the group of patients studied has provided a beginning fund of information which is of interest and value. This will no doubt

grow and expand as time goes on and, with parallel research activities, may very well make significant contributions in terms of adding an additional dimension to the understanding of the problems of health and disease and their effective management.

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#### La enseñanza de la Ecología humana

El término "ecología" se define usualmente como ciencia de la relaciones entre los or-

ganismos vivos y su medio ambiente. La Ecología moderna (el término fué propuesto en 1869 por Ernst Haeckel) trabaja con métodos exactos y precisos y trata de coordinar en un esquema científico todos los datos que poseemos relativos a los hábitos y vida de los diferentes animales a fin de resolver algunos de los problemas prácticos que surgieron como resultado de la interferencia, causada por nuestra civilización, en los normales procesos de desarrollo en la vida animal y vegetal. La solución de algunos de esos problemas requiere conocimientos en campos varios, tales como Medicina, Zoología, Climatología, Historia, Demografía y Etnología. Las relaciones del hombre con el mundo animal son hoy objeto también de la mayor atención en dicha ciencia. Muchos problemas referentes a salud y enfermedad humanas pueden ser mejor comprendidos cuando se tienen en cuenta y se coordinan todos esos datos. Este punto de vista ya ha sido reconocido y adoptado bajo el término de "Medicina Social". La enseñanza sobre la base de ese concepto implica los siguientes elementos esenciales: Integración de los conocimientos procedentes de varias fuentes especiales en Medicina y Biología humana; establecimiento de un centro de coordinación de todos los datos pertinentes, y un determinado sector de la población al que puedan ser aplicados los principios de Ecología. En el presente trabajo se describe el desarrollo de un tal programa de enseñanza en la Universidad de Boston, donde las funciones de cuatro especialidades médicas fueron combinadas y aplicadas a cierta área geográfica, bajo la supervisión de representantes de la Obstetricia, Pediatría, Psiquiatría y Medicina Preventiva. Ciertos pacientes fueron observados por algunos estudiantes en el hospital, en el Departamento de pacientes externos y en su domicilio, con el fin de ocuparse continua y comprensivamente de los problemas de salud y enfermedad de esos determinados pacientes y sus familias. Aunque el autor advierte que es demasiado pronto para evaluar definitivamente los beneficios derivados de ese experimento, se puede decir que lejos de producir un desarreglo en el *curriculum* regular, dicho experimento proporcionó oportunidad excelente para enseñar las especialidades en un ambiente en el que se pone énfasis en la estrecha relación que existe entre los dichos campos. En el breve período (2 años) que dura el programa descrito, la acumulación de datos derivados del grupo de pacientes observados ha producido una fuente valiosa de conocimientos ecológicos de interés general.



## **The Wisconsin Preceptor Program**

### **—A 30-Year Experiment**

### **in Medical Education**

**JOHN Z. BOWERS AND ROBERT C. PARKIN**

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**I**N 1926, the University of Wisconsin Medical School expanded from a two year to a four year curriculum. At that time, Charles R. Bardeen, professor of anatomy and dean of the medical school, initiated a *preceptor program*. The program has been in continuous operation since 1926 with singularly little change in duration, content and, in general, personnel.

In July 1955, with the support of a grant from the Rockefeller Foundation, Wisconsin initiated a general review of the educational program in the medical school. As a part of this review, it seemed appropriate to take a look at the preceptor program in regard to such questions as its objectives, its content, the attitude of the students and its relation to other aspects of the educational program.

In undertaking such a study, we were not unmindful of the fact that there is today considerable interest

and, at times, "pressure" on medical schools for the development of preceptor programs. We were aware that many medical educators are convinced that preceptor programs have no place in the medical curriculum. By evaluating a program that has been operating for 30 years, we hope to gather information that may be helpful to medical education. Just as each medical school has different problems and relationships, so a preceptor program may be valuable in one school and of no value to another.

#### **Objectives of the program:**

The 24 preceptor programs currently operating in the medical schools of the United States have various objectives. These include:

1. Learning the art of medicine
2. Emphasizing rural general practice

3. Diversifying resources of clinical material

4. Strengthening relations with the profession

In the words of Bardeen, the Wisconsin program "was designed primarily to give the average undergraduate student an opportunity to learn something of *medicine as an art* through close association with a series of preceptors selected because of their skill in applying the science of medicine in daily practice."<sup>1</sup>

In considering the Wisconsin program, it should be recalled that the University of Wisconsin Medical School and the University Hospitals are situated on the general university campus in Madison, a town of 90,000 people. All patients coming to the University Hospitals as bed patients or out-patients must be referred by a physician or by the State Welfare Program. As in many University Hospitals, a great deal of the clinical material represents chronic and complicated disease problems. Further, we do not have access to a large indigent or semi-indigent population in an out-patient department. Our student population of 17,000 represents the largest source of acute day-to-day illness teaching material. For the students then, the preceptor program represents an opportunity to see a variety of common disease problems not available in substantial numbers in our University Hospitals. Our current study, in which we are systematically gathering student opinions and attitudes before and after the preceptor experience, has repeatedly emphasized this opportunity to see acute disease as the major objective of the student during his preceptor experience.

#### Operation of the program:

From the inception of the program,

each preceptorship has developed around a preceptor-in-charge, who has or had associated with him physicians representing the various specialty areas—surgery, internal medicine, pediatrics and obstetrics. Of the 15 preceptor centers currently in operation, eight are directed by surgeons, five by internists and two by general practitioners.

There are eight formally organized clinics with staffs of six to 24 physicians and seven informal groups of two to seven physicians which have gathered together solely for this educational enterprise. Thus, our program is centered on *groups* of preceptors.

The senior year at Wisconsin runs for 48 weeks and each student is required to spend three months at a preceptor center. A student is never assigned to a preceptor center in his home community—otherwise selection is quite by random.

In general, the student spends the mornings in the hospital. In the afternoon he sees patients and does histories and physical examinations, either at the physician's office or in the hospital. He may be on call at night for emergency cases or deliveries. He may make a few house calls.

The three months is usually divided primarily between medicine and surgery with some obstetrics and pediatrics. Experience in other fields depends upon the specialties represented in the preceptor group.

As with any program the key problem is the selection of good preceptors and the maintenance of good communication with them. The administrative officers of the medical school have toured the state once a year to visit each preceptorship. Faculty representatives have visited the preceptorships to review the program with the preceptor. The preceptors gather in Madison in the Fall

## *The Wisconsin Preceptor Program*

and at Commencement. At the last two meetings we have spent the majority of the time in discussion of the objectives and operations of the program. Three preceptors are requested to present 20 minute descriptions of their program and to point up any problems of a local or general nature. There have also been outside speakers to discuss problems of medical education or describe other preceptor programs. It may be trite, but worthy of emphasis that a good flow of communication between the medical school and the preceptors is essential—and, a challenge.

### **Impressions of Students**

The best source of information about a preceptor program is the student. Student opinion may be summarized as follows:

1. Students are enthusiastic about the preceptor program and look forward to it as one of the high points of their medical school career. All students interviewed have stated that the medical school should not reduce the time occupied by the preceptor program.

2. As mentioned earlier, the students report that the greatest benefit of the preceptor program is the opportunity to see acute disease—"the problems that we do not see at the University Hospitals."

3. The student's approach to the patient and the patient's approach to

the students is more intimate, more penetrating and more satisfactory. Students like the fact that they make the first contact with the patient—"patients do not give stock answers as they do at the University Hospitals"—"I have more opportunity to see the patient's family and to understand his total problem." *The students learn how to talk to patients.* Students report that the preceptor experience may at least as often determine a field that he does not wish to enter as in suggesting a field of interest.

Now a few debits:

1. Some students see this as an opportunity to prepare for internship. We question the value of this aspect of the preceptorship.

2. The students see too many patients a day and develop, of necessity, too many short cuts in evaluating a patient. It is refreshing that the students view this with concern—they are keenly conscious of this defect.

3. The student may be allowed to be on his own too much—students are apprehensive about this and frequently express a desire to be assigned in pairs.

4. The student may find himself on a three month rotating externship in which he sees so much and does so much that there is little opportunity for follow-up study. Our students state that they work harder on the preceptorship than at any time during their medical education.

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# An Alumni Evaluation of the Wisconsin Preceptorial Program\*

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THIS REPORT deals with the findings of a survey of certain alumni of the University of Wisconsin Medical School in regard to the senior year preceptorship. The history and current status of the preceptorial program is described in some detail by Bowers and Parkin in the preceding pages. See reference 1.

In July 1956, a questionnaire was mailed to the graduates of 1932, 1937, 1947 and 1952. These years were selected on the basis of their considered relevance to the depression, the pre-World War II and the post-war years, and a more contemporary period. In addition, the selection was thought to reflect the number of years in which the program has been in operation.

In the interest of making little time demand of the respondees, and in recognition of the fact that many of the physicians in the sample had completed their preceptorships as much as 25 years ago, the questionnaire was brief, only 19 items, and there was an attempt to make the questions reasonably simple and straightforward in nature. The questionnaire dealt with a description of the locale and nature of the doctor's practice, principal characteristics of

his preceptorship as represented by the nature of patients seen, the setting or activities associated with patient contact, and attitudes toward the program. The last item simply invited comment.

A total of 223 graduates were sent questionnaires. Of this number 200, or 90 per cent, responded. An initial mailing resulted in a response of approximately 70 per cent. A follow-up letter apparently helped to raise the response to the 90 per cent level. The response finally ranged from 85 per cent for the class of 1937 to 93 per cent for the 1952 graduating class. This is regarded as an enthusiastic response which speaks well for the interest of the graduates in the school, in the preceptorship program, or in both.

In analyzing the questionnaire a number of variables were considered as having potential significance. Certainly year of graduation could be regarded in this light. In addition, questionnaire responses were examined in terms of whether the doctor was practicing in a rural or urban area, whether he identified himself as a specialist or general practitioner, where his preceptorship was taken, and finally the time in his senior year in which the preceptorship was served.

In Table 1, the alumni are considered in terms of their current medical activity or status. Fifty-three per cent are self-identified as

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**TABLE 1**  
**Response to Preceptorship Questionnaire**  
**in Terms of Nature of Practice**

<b>General Practice</b> .....	<b>47%</b>
General Practice (no restriction).....	19%
General Practice (some restriction).....	28%
<b>Specialty</b> .....	<b>53%</b>
Internal Medicine.....	14%
Surgery.....	10%
Obstetrics & Gynecology.....	6%
Pathology.....	4%
Psychiatry.....	4%
Radiology.....	4%
Other.....	11%

being in specialty practice while 47 per cent describe themselves as general practitioners. These figures agree fairly well with those presented by Dickinson<sup>2</sup> for graduates of Wisconsin who are in full-time practice. As might be suspected, a high correlation was obtained in comparing the nature of the practice with the population of the area in which the doctor works. Urban locale and specialization tend to go together while general practitioners are considerably more frequent in towns and rural areas. This leads to a confounding of these two characteristics in the sample studied which makes it impossible to study the correlates of these two factors independently. In any event, we were somewhat surprised to find that neither of these variables appeared to color, in any marked way, the doctors' attitudes toward his preceptorial experience. One exception to this point will be made later.

An early item on the questionnaire dealt with the activities which characterized the preceptorship. In this case the performance of histories and physicals in a hospital setting proved easily the most frequent activity and was ranked as a primary function by over half the group—house calls were ranked as occurring with the

least frequency. Analysis of this item by alumni classes revealed a significant difference between the class of 1947 and other years. In this case the choice of surgery as a primary activity was made by only 3 per cent of the group. In the other classes, this activity was ranked first by 15 per cent. It might be suggested that the post-war influx of residents into the various hospitals involved in the program resulted in a reduction in the amount of time students were likely to spend in the operating room.

Another item dealt with the types of patients to which the student was exposed during his preceptorship. Although there was no significant difference between the classes studied, there may be a slight tendency with the passage of time for a medical patient to be in greater evidence than the surgical patient. Thirty-four per cent of the class of 1932 considered they saw medical cases most frequently while 56 per cent of the class of 1952 made this response. The ratio of medical to surgical patients shows a consistent shift over the 20 year period. If reliable, this trend may simply reflect the current tendency for persons to receive hospital care for nonsurgical conditions.

One question dealt with a feature which is not infrequently assigned to

**TABLE 2**  
**Areas in which Alumni Indicated the Preceptorial**  
**Experience Influenced their Career Decisions\***

I. Choice of residency.....	20%
II. Choice of internship.....	14%
III. Choice of general practice.....	13%
IV. Choice of rural setting for practice.....	9%

\*Actually, 42% indicated they had been influenced in some way or ways by the preceptorship. Approximately one third of those who were influenced, felt the preceptorship to determine more than one decision.

preceptorial training, that of the close teacher-student relationship. Approximately 60 per cent of the total alumni group indicated their preceptorship was characterized by a closer teacher-student relationship than had existed at the university. When considered in terms of years, no consistent trend was noted. However, a tentative selection of those preceptorships in which the student's contact appeared to be primarily with a single physician yielded highly significant results which suggested that such a setting appears to foster a feeling of close relationship. Ninety-five per cent of students who had been assigned to preceptorships belonging to this type replied that they had experienced a more intimate learning situation.

A second point often attributed to preceptorial training is that it serves as a device for encouraging young

doctors to enter general practice and/or practice in a rural area. Only 42 per cent of those responding to the questionnaire indicated that the preceptorship had served to influence any important aspect of their subsequent medical career decisions. Of those reporting some influence, only nine per cent felt that their preceptorial experience led them to locate their eventual practice in a rural setting. Putting it another way, only one out of 10 of the graduates was influenced in this fashion. Table 2 presents a breakdown of the responses to this question.

Table 3 presents figures reported by Dickinson<sup>2</sup> which permit a comparison of Wisconsin with a number of other medical schools—Marquette was selected as the other medical school in the state, Minnesota and Iowa as medical schools in somewhat comparable states, and Vermont—in-

**TABLE 3**  
**Nature of Practice of Doctors in Full-Time**  
**Practice from Selected Medical Schools**  
**from 1925 to 1950\***

Nature of Practice	Wis.	Marquette	Schools Vt.	Minn.	Iowa	Nat. Avg.
General Practice.....	41%	57%	46%	48%	40%	38%
Part-Time Specialty.....	9%	13%	12%	9%	13%	11%
Full-Time Specialty.....	35%	20%	30%	28%	34%	31%
Academic .....	4%	1%	1%	3%	2%	1%
Other** .....	11%	9%	11%	12%	11%	10%

\*Data from Dickinson (see references). Comparisons do not include residents and interns.

\*\*Other includes those in administrative work, those working with the federal government and physicians who are retired or no longer associated with the practice of medicine.

## *The Wisconsin Preceptor Program*

asmuch as a preceptorship is a part of that school's medical curriculum. These figures would not appear to support the contention of the rural-general practice career influence of the preceptorship. On the basis of this evidence, Wisconsin has the lowest percentage of graduates in full-time practice, or in general practice and a higher percentage in teaching and research. In fact, if one were to assign any decision-influence role to the preceptorship, it might well be that of helping to crystallize his interests in specialization. Although such a conclusion seems generous, it is more consistent with the information provided in Tables 2 and 3 than is the notion of a rural practice influence.

The questionnaire also dealt with attractive and undesirable features of the preceptorship. Slightly over half of those responding felt that the primary virtue of the program lies in the fact that it takes the student out of the university and permits him to have contact with medicine at a community and family level. When the strong points were considered by physicians currently involved in a rural practice, there was a tendency for them to cite the preceptorship as affording an opportunity to learn about acute medical and surgical problems. It could be suggested that the doctors who locate in an urban setting, many of whom specialize, regard the preceptorship as having given them a view of medical practice in the "wider community" while the rural physician is more concerned with acquisition of diagnostic and therapeutic skills and knowledge.

On the debit side, the first ranking criticism related to the preceptor who was too busy to give the student sufficient attention. Too much routine, too little responsibility, and perhaps

in contrast, too much pressure to permit thorough study of patients were primary criticisms of a small number of the alumni in this sample. Almost one fourth of the respondents offered no criticism of the program.

The final section of the questionnaire was represented by an item which simply invited comment. Eighty-eight per cent of those who returned questionnaires made comments which were judged on a five point scale ranging from highly critical to highly favorable responses. Over half of the replies were highly favorable and only about one-tenth of the alumni commented in a critical or very critical fashion. An analysis of these comments in terms of graduating year revealed a significant tendency for the more recent classes, particularly the class of 1952, to be more critical than their predecessors. This may indicate that with the passage of years in practice, the preceptor experience assumes increasing value.

In summary this questionnaire survey of the preceptorship has indicated the existence of generally enthusiastic attitudes toward the program. It is typically seen as affording a close teacher-student relationship. There is no evidence that the Wisconsin program acts to encourage graduates to enter the practice of general medicine or to locate in a rural area. In fact, there is evidence that the graduates of Wisconsin enter specialty practice with as great or greater a frequency than the alumni of comparable medical schools which do not include a preceptorship in their programs. Although this study does suggest the presence of changes in time of the activities and patients typical of the preceptorial experience, these differences may simply reflect general developments in the field of medical practice over the past 25 years.

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**Treinta años de experiencia con el Programa de Preceptores en la Univ. de Wisconsin**

En 1926, la Escuela de Medicina de la Univ. de Wisconsin inició el llamado *preceptor program*, al mismo tiempo que se extendió a 4 años el período de estudios en la Escuela de Medicina, que antes era de 2 años. Dicho programa ha estado funcionando desde entonces con relativamente pocos cambios. En Julio de 1956, la mencionada Escuela, con la ayuda de fondos de la *Rockefeller Foundation*, emprendió un estudio de todo su sistema educativo, y ésta fué la ocasión de pasar revista también el programa de preceptores y de volver a estudiar a fondo sus objetivos, valor de la enseñanza, actitudes de los estudiantes y otros aspectos más. El Dr. John Z. Bowers, Decano de dicha Escuela de Medicina, ofrece un estudio detallado de lo que representa una experiencia de 30 años en la Educación Médica, advirtiendo que es preciso tener en cuenta que el sistema de preceptorado ha de variar según las diferentes Escuelas (hoy día hay 24 Escuelas de Medicina en este país que lo tienen), y que su valorización del sistema de Wisconsin no podría aplicarse indistintamente a cualquiera de esas otras Escuelas. Charles R. Bardeen, Profesor de Anatomía y Decano de la Escuela de Medicina en 1926, que fué el que creó el preceptorado médico en Wisconsin, consideró que el objetivo principal de ese sistema es "ofrecer al estudiante no

graduado la oportunidad de aprender algo del 'Arte de la Medicina' a través de una estrecha asociación con algunos preceptores seleccionados por su capacidad destacada para aplicar la Ciencia Médica en su práctica diaria". El Dr. Bowers explica en detalle como ha funcionado y funciona el preceptorado en la Univ. de Wisconsin de acuerdo con el citado principio básico, adaptado a las condiciones peculiares de la Escuela de Medicina de ese Estado. Desde que fué iniciado el *preceptor program*, los estudiantes han sido partidarios entusiastas de este sistema, del que obtuvieron mucho provecho, siendo el más grande beneficio que recibieron, según ellos, la oportunidad de familiarizarse con ciertos aspectos y problemas de las enfermedades agudas que no llegan a percibir en el Hospital Universitario. El Dr. Bowers, aunque considera valioso el método de enseñanza con preceptores, no por ello deja de destacar algunos de sus defectos, como, por ejemplo, el hecho de que algunos estudiantes lo usan sólo como un modo de prepararse para su internado; o que, al ver, a veces, un número excesivo de pacientes durante el día, se sienten inducidos a usar "atajos" en su reconocimiento médico. Mas esos defectos, dice el autor, casi quedan compensados por el hecho de que los mismos estudiantes los advierten y se preocupan por encontrar remedios.

El trabajo del Dr. Bowers va seguido de una evaluación del *preceptor program* que se basa en los resultados de una encuesta llevada a cabo, en 1956, entre unos 200 graduados (de los años de 1932, 1937, 1947 y 1952) de la Escuela de Medicina de la Univ. de Wisconsin. En resumen, se puede decir que dicha encuesta confirma plenamente la tesis que el Dr. Bowers expresa en su artículo previo, es decir, que la gran mayoría de los estudiantes aprecian los valores de enseñanza de dicho método, aunque un detallado análisis de las contestaciones obtenidas revela que los graduados más recientes muestran una actitud más crítica que la que prevalece entre los de años anteriores.

# The Year of Internship

M. PRYWES

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"We have struggled with the perennial problem of the internship for over thirty years without finding a solution" —

*Dr. Arthur C. Bachmeyer,  
Presidential Address, 62nd  
Annual Meeting of the AAMC.*

THE SOLUTION of the perennial problem of the internship may contribute greatly to solving, at least partially, two of the foremost problems of medical education today: The first is how to squeeze into the limited period of the undergraduate curriculum the ever-increasing teaching material. The second is to find ways and means of helping the young graduate to apply his university training to everyday medical practice.

The year of internship, if conceived as an additional educational period of training, makes the first task easier. As a period of medical experience, it forms the bridge between theoretical knowledge and practical requirements.

Born partly out of necessity and in part deliberately based on the pattern of existing systems, our internship program in Israel is flexible and constantly under revision. In the course of a few years it has grown into a specific program in which diverse factors have played a part. Strangely enough, some of the drawbacks of Israel's situation have had a salutary effect. Thus, the fact that our medical school was opened only

eight years ago enabled us to make use of the experience gained by universities of long standing and to avoid certain mistakes. The composition of our faculty, whose members have been educated in so many parts of the world, provides us with personal knowledge of the diverse systems of internship adopted in various countries.

There are a number of other factors which have been decisive in the forming of the specific pattern of our system. Thus we are the only institution providing undergraduate medical training in the country. Furthermore, almost the totality of the medical services in Israel are provided by only four public agencies: the National Government, the Municipalities, the Workers' Sick Fund (the "Kupath Cholim" of the General Confederation of Labor) and the Hadassah Medical Organization (maintained by the Women's Zionist Organization of America), a fact which facilitates centralization from the organizational point of view. Finally, the very small size of our country presents no geographical difficulties in planning the internship on a nationwide and uniform basis.



### The internship program

Our internship is compulsory, and, as a matter of fact, it could not be otherwise as we feel duty bound to round out the undergraduate curriculum through an additional year of practical training. It is of a rotating type and must be completed by all the graduates of our school as well as by those who have just completed their medical training abroad. In the current program at least four months are devoted to internal medicine, two to pediatrics and three to surgery and gynecology. The intern may devote the rest of his time to specialties in which he is particularly interested or which are required by the hospital. The system may therefore be considered as standardized, but not rigid, since it gives some latitude for individual interests.

We regard the internship as an integral part of the undergraduate curriculum, as a fifth year of medical training. This is perhaps the most significant feature of our system as a whole. Consequently, although the internship starts after the final examinations, the student receives his diploma only *after* the completion of the internship, the period of "post-examination and pre-licensure training."

The system as a whole has been greatly facilitated by the fact that all the interns receive from the hospitals a reasonable salary, fixed at an amount which provides these young people (many of whom have a family to support) with a fairly decent standard of living, more or less freeing them from the financial worries usually encountered during the years of study. This is considered just and reasonable remuneration for the performance of the responsible tasks assigned to the intern. On the other hand, the fact that *uniform*

payment has been fixed for all hospitals in the country prevents a hospital of inferior standards from attracting interns by offering larger salaries. Competition between hospitals has thus been reduced almost exclusively to the field of their professional standards and educational programs.

### One single authority—the faculty

The nationwide and compulsory nature of the internship program obviously requires the supervision by a central authority. Since "the internship is first of all an educational experience; . . . the medical school should . . . prescribe its educational content and exercise control over it."

Our faculty approves hospitals for internship, determines the number of internships in each hospital and assigns the interns. It exercises full control over the program and its implementation—all this in full agreement with the hospitals and without any interference from other bodies or agencies. This arrangement has so far been working smoothly and to the full satisfaction of all the parties involved—the hospitals, the interns, and the medical school.

This system has several features, some of which affect the medical life of the country. To enumerate only a few:

(1) *Improvement of the medical standards of the hospitals and of medical care in the country in general.*

It is today well recognized that the intern is a stimulating factor in maintaining a high standard of medical care. Consequently, every hospital strives for the recognition of affiliation and endeavors to meet the faculty's demands. Formally, the faculty has no right to interfere in the appointment of the medical staff of

these hospitals. However in practice, the hospitals usually ask the advice of the faculty when filling senior posts, lest they endanger their affiliation.

In turn, the faculty has adopted the policy of granting academic recognition by conferring clinical titles on doctors occupying key positions in affiliated hospitals. This is done *ad personam* and after careful deliberation. The hospitals are therefore anxious to appoint physicians with superior qualifications who are likely to receive this academic recognition.

The recognition given to extramural institutions and teachers is a source of satisfaction to all those who generously devote time and energy to the education of the new generation of doctors. The system has led to a marked improvement in our relationships with the medical institutions in the country, and in the course of time cooperation has been extended to other fields, such as research and clinical routine work. We enlist the cooperation of the physicians of these hospitals by giving guest lectures in Jerusalem and participating in the final examinations of our graduates. We request them to organize special supplementary courses for our interns and for lower-class men who may spend their elective months in their hospitals. It has also enabled us to start new educational projects requiring their cooperation, such as postgraduate courses and fellowship programs. This strengthening of our ties with our affiliated hospitals and their medical staffs has greatly increased the authority and prestige of our newly established faculty among the members of the medical profession.

(2) *Adjustment of the internship program to the changing needs of the country's health policy.* The fol-

lowing may serve as illustrations of this point:

(a) Realizing that undergraduate instruction in public health was not sufficiently in line with actual practical needs in this field, we decided to improve matters in this respect by introducing an additional 13th month of the internship devoted completely to practical work in social medicine and public health services. This includes service in community and rural health centers, district health offices, mother and child welfare stations, health services for school children, etc. This work will be performed under the supervision of the faculty's department of public health and social medicine.

(b) In view of the local political situation, our young doctors must be prepared for wartime emergencies. With this aim in view we introduced recently a compulsory period of training in anesthesiology during the internship rotation.

(c) Mass immigration from underdeveloped countries has brought with it a great many marasmic infants, thousands of cases of trachoma, ringworm and similar skin diseases. This has increased our need for physicians with a special knowledge of pediatrics, ophthalmology and dermatology. Our internship program enables a considerable number of interns to devote some time to these specialties.

(3) *Educational versus service aspects.*

A hospital is not primarily an educational institution, as its main purpose is the rendering of medical service. Alert to insure that the training program is fully implemented, the associate dean pays regular visits to the affiliated hospitals, meets the medical staff and the interns, and checks on the implementation of the prescribed plan. In addition, the faculty appoints a tutor from the



staff of the affiliated hospitals who is even paid a nominal remuneration by the faculty, and who sees to it that the intern's requirements are satisfied by the hospital administration. When an intern concludes his work in a given department, the chief of service submits to the dean a detailed report on the intern's progress and qualifications. This report constitutes an important part of the student's file.

The all-important service aspect of the hospital's function is in itself a valuable educational factor. It is clear that the heavily staffed University Hospital, with its selected clinical material, far-ranging subspecialties, and its special teaching and research atmosphere, cannot give the student a proper appreciation of the way medicine is generally practiced. The student must acquire a more practical approach, outside the walls of the University Hospital, by the performance of responsible routine work. He must learn to work under pressure, with a minimum of aid and with greater speed.

(4) *Giving the intern a feeling of security and confidence.*

Another advantage of our system is the fact that supervision by the faculty gives the intern a feeling of assurance, and keeps him in touch with the teachers who educated him for years. He appreciates their watching over his further training and their guaranteeing his rights, so that he may be certain that he will not be exploited or neglected when leaving the protecting walls of his Alma Mater. The intern is kept in direct contact with the dean's office to which he may always turn for advice and assistance.

(5) *The thesis.*

At the end of the internship the student must submit a thesis before his medical diploma is granted. We

consider this as an integral part of the education of our physicians. While working on his thesis, the student learns how to tackle a medical problem from the scientific angle, how to explore the medical literature, and how to write clearly and with scientific precision.

The thesis is prepared under the guidance of a physician in the affiliated hospital in which the student serves his internship. However, the subject of the thesis must be approved by the faculty and the student must defend his thesis before a specially appointed faculty committee. We have revived this old medieval tradition, not as a formal examination but as a free discussion enabling the teachers to judge to what degree the student has mastered his problem.

The submission of the thesis and its defense again brings the intern in direct touch with the faculty before he can finally become a full-fledged physician entitled to practice medicine. His diploma receives the date on which his thesis is accepted, and according to an agreement with the Health Ministry, the same date is automatically considered as the date of licensure.

Every year three prizes are given for the best theses in the fields of experimental medicine, clinical medicine, and public health. These awards are considered great honors not only for the graduate but also for the teacher under whose guidance the thesis was prepared and for the hospital in which it was done. This also creates an additional bond between the faculty and the affiliated hospitals.

## Discussion

Doubts have arisen as to the continued necessity of the internship

since the clerkship has been introduced in the clinical undergraduate curriculum and the residency as a postgraduate training method. Deitrick and Berson<sup>2</sup> pose the question: "Is the internship any longer necessary as an educational instrument?"

On the other hand, Bachmeyer continues to regard the internship as an integral part of undergraduate education. This is also the considered opinion of the Council on Medical Education and Hospitals of the AMA and of the Commission on Graduate Medical Education.<sup>3</sup> The same view prevails as well in England. Sir David Campbell was the main speaker on the problem at the First Conference on Medical Education (London, 1953); he stated that "no doctor who has served an internship in a teaching hospital can fail to appreciate that he has had a vital educational experience."<sup>4</sup> France and the U.S.S.R. went even further when they recently made the internship an integral part of the undergraduate curriculum.

The main point, in our opinion, is to bring the internship under the direction of medical faculties as the most appropriate agencies for the adequate control of the implementation of an educational program in approved hospitals. Out of 867 approved hospitals in the U.S.A., only 25 per cent are affiliated with medical schools.<sup>5</sup> These hospitals can accommodate only 42 per cent of the prospective interns and the additional posts must be provided by nonaffiliated institutions. Furthermore, it would be a mistake to eliminate the whole group of nonaffiliated hospitals for purposes of the internship, as many of them are on a high medical standard and able to offer a good educational program. While on a visit to the U.S.A., we were informed by the President of the AAMC that there is

even a tendency not to assign interns to teaching hospitals (where they constitute a group of redundant workers between the clinical clerks and the residents) but to place them in nonaffiliated hospitals to a larger extent than hitherto.

It may perhaps be considered presumptuous on the part of an outsider to suggest educational experiments in a country so large and rich in experience as the U.S.A. However, we have been encouraged to do so by the Secretary of the AAMC who assured us that "it would be valuable to see our own problems through the eyes of one who comes from abroad and views our problems without prejudice or previous traditions."

We have implemented Dr. Bachmeyer's scheme in our country. In the United States, however, its application is much more complicated, and except for the Matching Plan for appointing interns little progress has been made there in the solution of the internship problem. Under these circumstances we feel encouraged to bring before the American medical educators an appeal to reconsider the situation. It seems to us that this could be done in the following way:

The approved hospitals in a given state should be granted official affiliation with the medical schools functioning in that state. A special internship committee could be appointed by each faculty to take care of a number of approved hospitals in their geographic region. The average number of approved hospitals to be affiliated to a given medical school for internship purposes, would be between 5 and 12. This seems to be a reasonable number in the light of our own experience (our faculty controls 12 such hospitals). Analysis of the distribution of the American medical schools and the approved hospitals

shows that in all states but six this would be technically feasible.

Of course in Israel, because of its small size, no geographical problems exist. Were this plan to be applied in the U.S., difficulties would arise when students seek internships in other states. Such difficulties could be solved by transferring educational responsibility for the intern from the faculty at which the four-year undergraduate course was taken, to other faculties supervising the internships in their own states. At the end of the internship, reports on the intern's progress would be forwarded from the faculty supervising the internship to the original faculty. The latter would then be able to confer the M.D. degree with the satisfactory completion of the combined period of theoretical and practical training. Thus the American medical schools could resume the previous system of requiring the completion of one year of internship before granting the M.D. degree. This system seems to us the only way of securing for the faculty the full control of this vital phase of medical education.

There is the added advantage that this program will not only result in better relations between the hospitals and the medical schools, but will create another field of fruitful cooperation between the various medical schools themselves.

The program as a whole may require a central coordinating agency and it seems only natural that the responsibility may be assumed by the Association of American Medical Colleges in cooperation with the Council on Medical Education and Hospitals of the AMA.

The faculty's control over the internship remains for us a fundamental principle in medical education today. This is why we felt it neces-

sary to bring it before the American medical schools for reexamination.

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#### **El internado médico en Israel**

El internado médico constituye, en los Estados Unidos, un problema para el que aun no se ha encontrado solución adecuada. El Dr. Moshe Prywes, Decano Asociado de la Escuela de Medicina de Jerusalén, el cual, en 1954, fué becado para estudiar la Educación Médica norteamericana, describe en este trabajo el modo en que dicho problema ha sido resuelto en Israel. En este país, el internado de hospital es considerado como parte integral de los estudios de Medicina, o sea, como un quinto año del *curriculum*. Según el programa ahora en vigor, 4 meses del internado, por lo menos, se dedican a la Medicina interna; 2 a la Pediatría; 3 a Cirugía y Ginecología. Y el interno puede ocupar el resto del tiempo en cualquier especialidad que le interese particularmente. Aunque el internado se inicia después de los exámenes finales, ningún estudiante puede recibir el título antes de haber completado el año de internado. Este sistema ha sido facilitado por el hecho que los internos reciben del hospital, durante dicho período, un razonable salario, cuya tarifa es la misma en todos los hospitales del país, lo cual ha contribuido a eliminar la competencia entre hospitales. La supervisión del internado ha sido centralizada y está exclusivamente en manos de la Facultad de Medicina. Esta ejerce pleno control sobre el programa de trabajo y el modo en que éste se lleva a cabo. Y también

## The Year of Internship

es la Facultad médica la que aprueba (o rechaza) los hospitales; determina el número de internos que cada uno ha de tener y les asigna éstos individualmente. El autor destaca algunas consecuencias que esa organización del internado ha producido y las cuales afectan en cierto modo el estado general del tratamiento médico en el país: Mejoramiento del nivel de los hospitales (los cuales, para recibir internos, tienen que cumplir con ciertos *standards*); ajuste del programa de internado a las necesidades cambiantes de la salud pública del país; énfasis en el *servicio* médico más bien que en

la *educación* médica, etc. Al final del período de internado, el estudiante debe presentar una tesis (antes de recibir el título de M.D.), la cual se prepara bajo la dirección de uno de los médicos del hospital en el que reside, aunque el tema ha de ser aprobado previamente por la Facultad, y el estudiante debe defenderla ante un Comité especial de ésta. En sus conclusiones, el autor comenta sobre la discusión actual, en los Estados Unidos e Inglaterra, de la cuestión planteada por Deitrich y Berson: "¿Es necesario el internado hoy día como instrumento educativo?"

# The First Seminar on Medical Education in Colombia

**LUIS BORRERO**

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**B**ROADLY SPEAKING, medical education has not long been a profession in Colombia and the number of people exclusively dedicated to it has been few. As a necessary conclusion, there are gaps and defects in the curriculum, and teaching techniques are commonly inefficient and ineffective. There were only three medical schools in 1940 and four new ones appeared between that date and 1954. No regular contact existed between them, exchange of professors was uncommon, and general regulations were completely nonexistent, so that the curriculum differed from school to school to a marked degree. Internship was a common requirement but lacked adequate organization, and almost everywhere residents were non-existent. The development of teaching in the basic sciences lagged markedly behind modern requirements. The medical profession and the faculties of the several medical schools were aware of many of these deficiencies and tried to correct them through modifications of the "accepted" or "traditional" curriculum by requesting help of scientific missions that spent short periods of time in the country and made specific recommendations,

generally for only a few subjects in the curriculum. There was no responsible organization that was able to study the recommendations and enforce even a few of them, and consequently much of that effort was wasted.

In 1953 the report of the last mission appeared, that of Dr. Maxwell E. Lapham, Dr. Charles M. Goss and Dr. Robert C. Berson. They tried hard to analyze the status of medical education in the country and suggested a series of changes, aimed to strike at the roots of the problem, including modification of the academic organization in most schools along with recommendation of a joint national study of the orientation, techniques, programs, etc., of the entire medical curriculum, together with an analysis of the required and existing facilities for medical education in the country.

The Facultad de Medicina de la Universidad del Valle, in Cali, Colombia, took upon itself responsibility for preparing and conducting a seminar on medical education as a means to start the recommended modifications and to establish common grounds for discussion and definite orientation for the teaching ac-

## *The First Medical Education Seminar in Colombia*

tivities. The enthusiastic response of all the medical schools in the country made possible the First Seminar, which took place at the Medical School of the Universidad del Valle, December 6-10, 1955.

### **Preparatory work**

Several meetings of the deans of the seven medical schools in the country were arranged in order to establish a basis of organization and to decide on the main points to be discussed at the seminar. The aims were defined as follows:

(a) To obtain information on the status of medical education in Colombia and on the medical schools themselves.

(b) To discuss the programs and techniques of teaching, their advantages and defects.

(c) To reach conclusions and to make recommendations useful for the improvement of medical education in Colombia.

(d) To establish a basis of cooperation among the medical schools.

The value of human contacts was deemed most important and for that reason it was felt that the goal should be to bring to Cali as many faculty members of the medical schools as possible. The existence and valuable cooperation of the Fondo Universitario Nacional de Colombia, a government agency created to promote cooperation and give momentum to national programs in the realm of university activities, provided funds for that purpose.

The analysis of programs was intended to promote discussions at specialized levels and advised that the seminar be divided into sections, each one dealing with the teaching of a group of related disciplines. Ten such sections were created (one on the organization of medical schools)

and tentative programs were prepared by the medical school of the Universidad del Valle. After revision and modification by the deans, an agenda was adopted and distributed to all of the medical schools. Each subject was to be presented through a short paper, followed by discussion. The deans selected the officials for the seminar as follows:

President of the Seminar: *Gabriel Velázquez-Palau, M.D., dean of the medical school of the Universidad del Valle;*

General coordinator: *Alfonso Mattallana, M.D., professor of pharmacology, Universidad del Valle Medical School;*

One moderator for every section of the seminar;

One coordinator for each section.

General and section coordinators established contacts several months in advance of the seminar and explained to every prospective attendant the aims, regulations and procedures to be followed, while detailed information was sent to moderators, group coordinators and speakers.

To obtain information on the courses and facilities of the medical schools in the country, a survey was carried out and the results tabulated and made available to the sections during the seminar.

All sections had a similar program, viz.:

(a) First day: discussion of each major course of instruction in the field, including the aims of the course, time schedules, location in the curriculum, teaching procedures, comparison with similar courses in foreign schools, etc.

(b) Second day: Coordination of the teaching of the subjects pertaining to the section with those of other sections and interrelation of courses in allied subjects occurring in different years of the medical career.



(c) Third day: Special points, obviously variable with the section considered.

#### Development of the seminar

The attendants at the seminar numbered 189 and included members of faculties from the seven medical schools in Colombia, representatives of several official agencies of Colombia, of the Pan-American Sanitary Bureau, the Rockefeller Foundation and Tulane University. They arrived in Cali on December 6, and registered at the Hospital Departmental Universitario where the clinical teaching of the medical school of the Universidad del Valle takes place and where the opening and final plenary sessions were held. In the evening the seminar was officially inaugurated by the rector of the Universidad del Valle and the dean of the medical school of the university. The aims of the seminar were stressed, technique of work detailed and the responsibility of the participants duly emphasized. All in attendance received copies of the "Objectives of Medical Education" as published by the Association of American Medical Colleges.

During the following four days the 10 sections of the seminar met simultaneously and independently in the precincts of the Facultad de Medicina, where each section had audiovisual and sound recording devices available, plus secretarial assistance. The sections were: morphological sciences (macro- and microanatomy and embryology), physiological sciences (physiology, biochemistry, biophysics, biology, pharmacology, nutrition), preventive medicine and public health (including bacteriology, parasitology, immunology and public health disciplines), pathology, medicine, surgery (including sur-

gical specialties usually separated from general surgery in the teaching curriculum of Colombia), psychiatric disciplines (psychobiology, psychopathology, psychiatry), obstetrics, pediatrics, and dean's section. At the end of the day each section prepared a summary of the conclusions reached and recommendations made, to be presented for the approval of the section on the next day, and then handed to the general coordinator for the preparation of the preliminary report.

The second and third day followed the same schedule. Whenever possible, two sections met together to discuss subjects of common interest. On the last day, time was available to review and summarize conclusions and recommendations and to give them the final wording for presentation in the closing session the following day. Social gatherings were few.

On December 10 all delegates met in the auditorium of the Hospital Departmental Universitario where each section presented its conclusions and recommendations, with some discussion from the floor in certain instances. The ministers of Health and Education of the country addressed the seminar. During this session, the preliminary report of the seminar was completed and offered to the members.

#### Publications

The preliminary mimeographed report included the text of all talks and material relating to the aims of medical education, the result of the survey of Colombian medical schools, the text of conclusions and recommendations of all sections and the list of participants.

The recommendations were published in the *Boletín de la Oficina*

Sanitaria Panamericana (40:329-335; 1956) through the kindness of Dr. Myron Wegman.

An English edition of the recommendations and conclusions was prepared by Dr. Ernest Carroll Faust, designated field coordinator, for use of participants in the ICA Tulane-Colombia program in medical education.

During the year 1956 the proceedings of the sections of preventive medicine and public health and of pathology appeared in the form of two books published by the Universidad del Valle, and a general volume is ready to go to press. The remaining sections are preparing their material with the same purpose in view.

#### **Conclusions and recommendations**

Many of these are of a detailed nature and have been fully outlined in the publications mentioned. Only a summary of the salient points of orientation is presented here under six headings:

##### **1. Organization of the Medical Schools:**

a) Departments as such did not exist in most of the schools. Their creation was strongly recommended and periodic departmental and interdepartmental conferences were advised.

b) The need of horizontal and vertical correlation of courses was stressed with the specific recommendation that material from the basic sciences be emphasized throughout the teaching of the clinical years; on the other hand, basic sciences should make an effort to use some clinical material in preclinical teaching but without sacrificing principles to accommodate clinical applications. Both preventive medicine and public health and psychology-psychiatry

should extend their teaching throughout most of the medical years, in the form of progressive, coordinated courses.

c) Integration was another major recommendation, to be carried out by means of:

*Clinico-pathological and clinico-therapeutic conferences, clinical grand rounds and similar activities.*

*Creation of departments which group together courses previously disconnected, viz., preventive medicine and public health, medicine (including specialties), surgery (including specialties).*

The study of patients in the clinical courses should be comprehensive and integrate the point of view of the basic sciences, psychosomatic aspects and discussion of the foundations and techniques of therapy to be employed.

d) Standardization of nomenclature and in many cases of procedures was advised.

e) Medical schools must prepare calendars and detailed programs so as to define clearly the work days and hours, the subjects to be treated and the personal responsibilities implied.

f) Creation of committees, which were lacking in most of the schools, was recommended.

##### **2. Organization of the teaching hospitals: This should be the responsibility of the medical schools and must include:**

*Standardization of systems for clinical records.*

*Organization of the internship on a one-year basis, full-time and with adequate programs and supervision.*

*Organization of the resident training program.*

Increase in the amount of pathological studies carried out in the hospitals, establishment of a series of periodic conferences in the hospital

(clinico-pathological and clinico-therapeutic conferences, etc.), creation of certain basic committees (tissues, records, etc.) and special clinics within the general hospital (tumors, rehabilitation, psychiatry).

Marked increase in the use of outpatient departments for teaching.

3. Referring to the teaching personnel, it was pointed out that professors are very few in Colombian medical schools and the creation of a sufficient number of full-time positions, with adequate salaries, was specifically recommended: at the basic science level exclusive dedication is an obvious need; in the clinical sciences full-time positions are desirable but geographical full-time arrangements are acceptable.

A major conclusion was that the medical schools must start programs leading to preparation of professors from their present students and improvement of the scientific status of the medical faculties. The professorial position must be attained only on the basis of academic qualifications and the "contest system" used up to now in most Colombian schools was declared unsatisfactory.

4. On the orientation of the regular teaching: The student reaches the university unprepared for it; selection must be a primary objective of medical schools which should create admission committees and study selection systems better than those in common practice in the country.

The teaching should be directed toward obtaining more individual work from the students and to stimulate their active interest.

Recommended means to achieve this end were:

*The number of courses per year should be reduced.*

*Reduction in lecturing and demonstration and increase in practical (laboratory and clinical) work. Sem-*

*inars, group discussions, journal clubs, etc. must be created where they are not a common practice.*

All teaching should be functional and deductive, not mere memorizing. Equipment and staff should be sufficient for personal work from the students and admissions must be limited on the basis of those facilities.

5. Projection of the medical schools into the community: The study of the community must be part and parcel of the medical training and socio-anthropology should be a starting point towards programs of comprehensive medical care to be carried out by the medical schools.

The present law which requires one year of practice of medicine in rural communities has good points but the exercise of that service should be organized and supervised by the medical schools.

6. Interrelations of the Colombian medical schools: The present isolation of the schools from one another was recognized and criticized and exchange of professors and teaching material was recommended. Periodic seminars on medical education were approved and the second one was scheduled for December 1957 in Medellín, with the medical school of the Universidad de Antioquia as host.

It was agreed that a National Association of Medical Colleges should be created, giving to it authority to establish requirements for acceptance of existing or projected medical schools and teaching hospitals and making it responsible for control and coordination of the medical curriculum in the country.

At a meeting of all seven medical deans in Bogotá December 3-6, 1956 an assessment was made of progress in each school since the First Seminar, and a National Association of Colombia Medical Colleges was formally constituted.

### Resumen:

La escasez de personal exclusivamente dedicado a la docencia médica y la desconexión existente entre las Escuelas de Medicina de Colombia llevó a solicitar el auxilio de misiones que hicieron recomendaciones varias sobre puntos específicos, hasta llegar a la misión presidida por el Dr. Maxwell E. Lapham, que recomendó la realización de un estudio detallado de las condiciones de la enseñanza médica en Colombia, de un esfuerzo de asociación entre sus Facultades y de una revisión amplia de la organización de las mismas y de sus sistemas de trabajo. Mediante reuniones repetidas de los Decanos de las Facultades de Medicina de Colombia se convino en un programa que fué desarrollado por la Facultad de Medicina de la Universidad del Valle y de acuerdo con el cual: a) se adelantó una encuesta sobre facilidades para enseñanza, métodos docentes, programas, etc. en todo el país, b) se seleccionó una serie de temas y c) se elaboró programas tendientes a llenar los cuatro siguientes objetivos básicos del Seminario:

- Obtener información sobre el estado de la enseñanza médica en Colombia,*
- Discutir programas y técnicas docentes en Medicina,*
- Alcanzar conclusiones y hacer recomendaciones útiles en las Escuelas Médicas del país, y*
- Establecer las bases de cooperación eficiente entre ellas.*

Ciento ochenta y nueve miembros docentes de las Facultades de Medicina asistieron al Seminario y trabajaron en él divididos en 10 secciones (Morfología, Ciencias Fisiológicas, Patología, Medicina Preventiva y Salud Pública, Medicina, Cirugía, Obstetricia, Pediatría, Psiquiatría y Sección de Decanos) revisando en días sucesivos los programas, coordinación con otros grupos de asignaturas y puntos especiales para cada sección.

Las conclusiones salientes siguieron estas líneas principales:

A) *Organización de las Facultades de Medicina*, creando Departamentos que actúen

como tales, estableciendo correlación horizontal y vertical entre los cursos y realizando integración en la medida posible. Igualmente se convino en: unificar nomenclaturas y (hasta donde fuera posible) procedimientos; preparar calendarios detallados que señalen días y horas hábiles; especificar todos los cursos en términos de tiempos útiles por estudiante y por año; crear comités especiales, etc.

B) *Organización de los Hospitales docentes*: Incluye estandarización de sistemas de historias, organización de programas de internado y residencia, aumento del trabajo anatomopatológico realizado en ellos e incremento del uso de las consultas externas para docencia.

C) *En relación al personal docente* se destacó la necesidad de incrementar el número de individuos de tiempo completo, su actual escasez en el sector de Ciencias Básicas y la necesidad de su dedicación exclusiva a la docencia, señalando la urgencia de favorecer y estimular la formación de profesores a partir de los actuales estudiantes de las Escuelas Médicas Colombianas.

D) *Orientación de la enseñanza regular*: Se recomendó enfáticamente reducir la teoría y aumentar el trabajo personal, subdividiendo para ello los estudiantes en grupos pequeños, aumentando las facilidades materiales, incrementando el número de instructores y estableciendo contacto estrecho profesor-estudiante.

E) *Proyección de las Escuelas Médicas sobre la comunidad*. La comunidad debe ser estudiada en la Facultad de Medicina a través de cursos de antropología social, medicina preventiva, etc. y debe tenderse al desarrollo de programas de cuidado médico integral por parte de las Escuelas Médicas. Se hicieron recomendaciones relativas a la ley Colombiana sobre ejercicio rural de la medicina.

F) Se decidió constituir la *Asociación Colombiana de Facultades de Medicina*, encargada de velar por la enseñanza médica en Colombia. Esta Asociación fué creada en Diciembre de 1956; ella debe preparar un Segundo Seminario de Educación Médica Nacional que tendrá lugar en Diciembre de 1957 en Medellín, Colombia.

# Medical Education in Germany

K. HOLLDACK

Dr. Holldack is with the Medical Polyclinic, University of Heidelberg. This article is reprinted from the October 1956 German Medical Monthly, the English edition of the Deutsche Medizinische Wochenschrift.

MEDICAL education in Germany still differs considerably from that of many European and non-European countries. In partially justified pride over their own teaching practices, many medical educators in other countries are critical about the German method in which the formal professorial lecture ("Grosse Vorlesung") still stands at the central point. This criticism turns not only on the method of teaching as such, but also the embodiment of this system, as represented by the patriarchal figure of the "Geheimrat."

The accompanying table, comparing the amount of time allotted to each period of schooling in Germany and the U.S.A. will make clear the differences between their several stages of education.

In Germany four years of elementary schooling is concluded by a rather strict selection of the ten-year olds through an entrance examination to the "Gymnasium."

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<sup>1</sup>In Germany, as in many other countries, a possible revision of the teaching programs in medical schools is being widely discussed. There is considerable diversity of opinion about the changes, if any, which should be introduced. The following article characterizes the present status of German medical education by comparing it with the general pattern existing in American medical schools.

(Editor)

The "Gymnasium" (Latin School) and its equivalents, the "Realgymnasium" and the "Oberrealschule" where there is a stronger emphasis on the sciences and modern languages, are able to eliminate every year those of its pupils who cannot maintain a set standard. In the course of nine years this leads to a weeding-out of a considerable percentage of pupils.

The standards of secondary school in Germany are on the whole considerably higher than those of the average American high school, chiefly because its pupils comprise a selection of the most gifted; instruction is not slowed down by those less gifted.

A further sifting takes place in the final examination, the "Abiturum." Those pupils who pass this are entitled to attend a university and to study in any faculty of their choice. A special selection of medical students, as is practiced in America, does not exist.

Preclinical studies, lasting five terms, introduce the future German doctor to anatomy, physiology, embryology, biology, chemistry and physics. In other words, he is taught the fundamentals of the structure and function of the normal human organism. After two terms students have to pass an oral examination in physics, chemistry, botany and



zoology (Vorphysikum).

A second oral examination, which lasts several days, has to be passed at the end of the entire 5 terms of the pre-clinical course. This examination, the "Physikum," is practically speaking the last chance to eliminate the unsuitable candidates.

There then begin the five terms of clinical instruction. During this time the student has to attend the required professorial lectures ("Hauptvorlesungen") in surgery, internal medicine and the various specialties. In the "Praktika" he learns the technique of physical examination, of obstetrical and gynaecological tests, and laboratory methods. At the same time he attends lectures in hygiene, bacteriology, social medicine, etc. The final examinations, the so-called "Staatsexamen," is spread over about three months. They consist of an oral test in each of 15 subjects, about one subject every week. During this time students "cram" the typical examination questions. In general, there are no mid- or end-of-term examinations in Germany.

Training in medical theory occupies the foreground of German medical education, contrary to the program in medical schools of the United States. As has been stated, all instruction revolves around the professorial lecture (e.g. in surgery, internal medicine, gynaecology) which is given by the head of the department (Ordinarius) who is at the same time director of the hospital or institute. The value of these lectures should not be underestimated. The lecturer is usually a mature man, who by reason of long personal experience is an expert in his branch of medicine. He is thus in a position to point out to the students general trends and correlations. He can range widely over his field and thus serves as a balance against the continuously

growing tendency towards specialization.

Instruction follows no fixed plan, but is usually loosely put together from hour to hour. It is, above all, adjusted to the available patient material. Thus the young student receives his initiation into clinical medicine from a highly qualified lecturer. Physicians, old and young, have often described how these first impressions remain as guide-posts for their later life.

Special Lectures (Spezialvorlesungen), which acquaint students with the latest results in scientific research, are as a rule given by younger lecturers (Privatdozenten). In their teaching these men have a tendency to stick to their own, often narrow, fields of investigation.

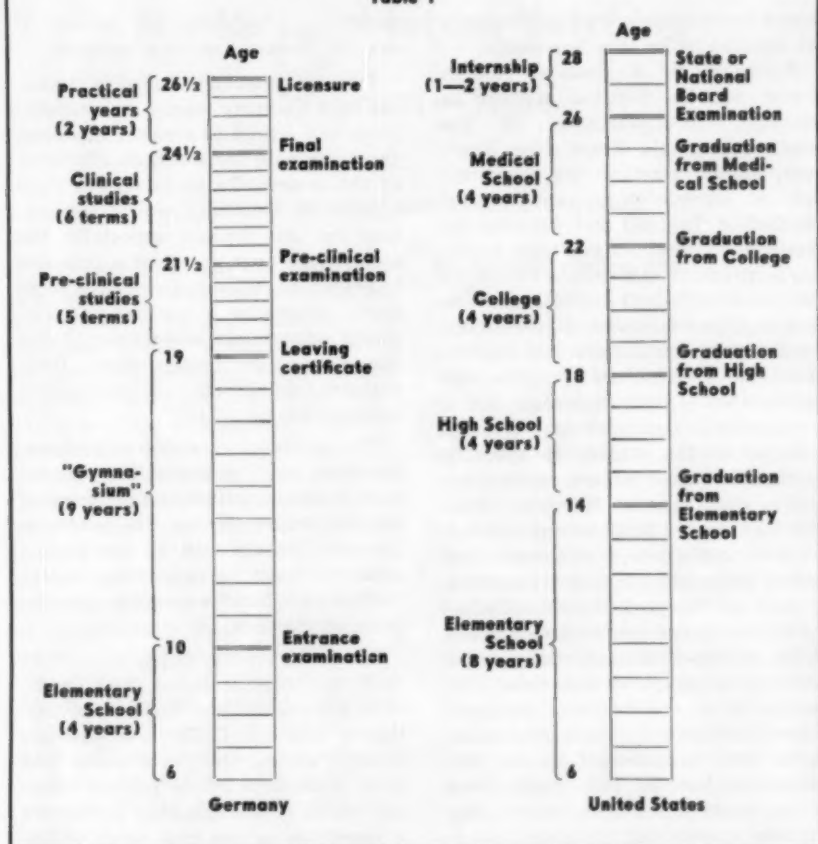
At the end of his studies a German medical student is noticeably behind his American counterpart in his abilities as a practical physician. Furthermore, the Anglo-American system is in a better position early to recognize and eliminate undesirable students. On the other hand, our less rigid courses of study offer the gifted and interested student great possibilities for individual development.

While an American medical school produces doctors all of whom are about equally well educated, the range of variation between "good" and "bad" in Germany is definitely greater. A serious deficiency in German medical education is the lack of opportunity for the student to gain practical experience. With the exception of the comparatively few "Praktika" and the "Famulatur," a type of preceptorship, which he can take in various hospitals during his vacation, the medical graduate will have had no or little experience in the technique of handling patients.

Despite these instances where Ger-



Table 1



man students are surpassed by those trained by different systems, and despite the fact that many professors are in agreement on certain defects in the German medical training program, reform has as yet been undertaken only very hesitantly. Apart from extending the training period to two terms and the medical assistantship to two years, few innovations have been introduced. The reasons for this are manifold.

It is generally recognized in Germany that ever-growing scientific knowledge and the resultant continuous growth of specialization makes

further reforms mandatory. The advantage of active collaboration of students, as contrasted with the purely receptive attitude of the students under the German teaching method, is also widely confessed.

However, before one can introduce an educational program modelled on that of the U.S.A. there are many obstacles which are hard to overcome.

First of all, as shown in a careful comparison of the student-professor relation under the old and the new systems, a large increase in the number of instructors and assistants

would be necessary. Purely economical reasons make this impossible.

Furthermore, a medical reform would not be possible without a thorough re-organization of the teaching hospitals. There arise, however, doubts whether the coordination of knowledge, so masterfully handled in England and America by means of conferences and team work, really presents the only solution to the problem. It isn't difficult to overestimate the advantages derived from the lectures of a mature and experienced man who has the ability to recognize what is truly essential.

"Academic freedom" in Germany includes for the student an absolute right to transfer to any university within the Federal Republic. This privilege cannot be given up without a shock to the whole structure. One cannot be satisfied with the exchange of facts as the goal of medical education but must try to develop the ability of the student constantly and critically to examine new data. The monotony in the training program of various medical schools in America is often commented on by the European observer who is surprised at the ready acceptance of officially imposed standards.

The advantages of a more practical medical education are widely recognized in Germany. The remembrance of long, painful, and ultimately unfruitful hours on hard lecture theatre seats are fresh in the memory of young doctors. The urge to "do it yourself" and to learn through practical activity should become a part of the educational program in Germany and furnish a powerful incentive for students. This type of

program is already in action in several German medical centres.

But one must reflect that in America the inability easily to transfer from one school to another has been the price paid for the high efficiency of the system. To adopt such a rigid scheme in Germany would necessitate for the schools, especially the elementary ones, to adopt a free and independent system along American lines. Otherwise a narrow and pedantic educational system would dog the young German student from primary school up to the final medical examinations.

The constant repression of personal decision and responsibility would lead to an immaturity of the medical student, especially in his academic pursuits. This would be too high a price to pay for providing better "schooling" for the coming generations of doctors.

It appears very important to us that the education of the doctor, with the many opportunities for initiative allowed under the German system, should lead to a wider and freer outlook on life in general without which it is impossible to become a physician in the true sense of the word. Many in this country agree with much that has been accomplished in America and are now themselves reforming step-by-step. However, we do not believe that we should be as radical. The diverse American efforts of reform show that an ideal solution has not yet been found. A compromise between the American and the German systems of medical education seems, at this time, the most desirable goal.

# The National Intern Matching Program—1957

JOAN R. MCJOYNT AND EDWIN L. CROSBY

**K**EEPING PACE with its constantly growing scope, the National Intern Matching Program turned to an electronic brain for assistance with its sixth program. IBM's 704 "brain" analyzed and checked more than 60,000 hospital and student choices to produce the 1957 results.

Again, as in every year since its inception, the matching program has served more students and hospitals than ever before. Medical school deans have supported NIMP wholeheartedly; the program owes much of its success to their distribution of information to students. This, combined with the interest and conscientiousness of hospital administrators, has produced a smooth-running, efficient organization able to meet the demand for a central clearing agency for internship appointments.

Early each Fall NIMP sends each student a directory showing the number and type of internships offered by hospitals participating in the program. At the same time, each hospital receives a directory of students seeking internships for the coming year. Students apply directly to the hospitals of their choice while hospitals are free to use any interview techniques they desire. These applications and interviews commit neither students nor hospitals. Instead of hurried, on-the-spot conclusions, both have time to weigh their decisions away from pressure.

Miss McJoynt is Secretary and Dr. Crosby is chairman of the NIMP.

## Confidential ranking lists

Final decisions are reflected in the confidential ranking lists submitted to the NIMP office. Each student submits a list of all hospitals to which he has applied, ranking them in order of his preference and giving the rank of X to hospitals by which he does not wish to be considered. Hospitals submit lists of all applicants, also ranking them 1, 2, 3, etc., from most to least desirable, with the rank of X being given to students the hospitals do not wish to consider.

When these lists are received by the NIMP office in January, each choice is recorded on a punched card. A printed confirmation list is prepared, checked by the NIMP staff and sent to the originator for final verification. No great automatic "giant" performs this step. A group of approximately 10 clerks personally read the original lists submitted by hospitals and students and report even the smallest discrepancy. Even though a great deal of time pressure exists during the first weeks of February, the NIMP staff meticulously completes a cross-index of all choices to eliminate any chance of error or omission.

## The matching operation

After original lists and subsequent changes—there are about 500 each year—are completely confirmed, the cards are ready for the matching operation. This year the cards were flown to New York, re-checked upon

**TABLE 1**  
**General Results 1952-57**

Year	Hospitals participating	Intern programs offered	Total positions offered	Total positions filled	Per cent filled	Number unfilled positions	Students participating	Students unmatched
1952	795	1068	10414	5564	53%	4850	5681	117
1953	808	1102	10971	5744	52%	5227	6033	289
1954	820	1032	10729	6051	56%	4678	6412	361
1955	814	1056	11075	6379	58%	4696	6713	334
1956	821	1063	11459	6588	57%	4871	6821	233
1957	822	1052	11804	6539	55%	5265	6923	384

arrival in the IBM office, and finally "fed" to the 704. The "brain" was instructed to match each student to his highest choice hospital that had a place for him while at the same time matching to each hospital those students the hospital desired most and whom the student ranked highest. Tapes whined, lights flashed. Six months of preparation, checking and confirming, culminated in the 1957 matching results. The instructions and results were identical to those used by the NIMP since its inception. But never before has this been accomplished with the speed and additional checking devices made available by use of the 704.

NIMP enjoys the enviable record of never having made an error in over 38,000 matchings. Being interested in preserving this record, the staff checked the 704 results in Evanston. This check verified that:

1. If a hospital filled its quota, it received the highest men on its list who wanted that hospital.

2. If a hospital did not fill its quota, it did receive all possible applicants

and there were no additional students seeking positions there.

3. Each student received the highest choice hospital on his list that did not fill its quota with more desirable applicants or rank the student X.

Upon completion of the check, individual notices were prepared for each student and hospital. On March 12 these notices were mailed and on March 18 results were announced simultaneously throughout the United States.

The statistics presented in Table 1-4, show the general pattern of the program over the past six years. Table 5 presents a summary of the characteristics of the hospitals to which students were matched in Program VI.

Table 1, the general results, indicates a larger number of unmatched students in 1957 than any previous year. This is due primarily to the large number of graduates of foreign medical schools who participated in this year's program. Many foreign students apply only to the larger more popular hospitals which gen-

**TABLE 2**  
**Application Per Student**

Year	Number of students	Number of applications	Number per student
1952	5681	21728	3.8
1953	6033	19416	3.2
1954	6412	21579	3.4
1955	6713	25617	3.8
1956	6821	29474	4.3
1957	6923	30434	4.4

**TABLE 3**  
**Percentage of Students Matched by Order of Choice**

Year	Per cent First choice	Per cent Second choice	Per cent Third choice	Per cent Fourth choice or lower
1952	84	10	3	3
1953	85	10	3	2
1954	82	11	4	3
1955	76	14	5	5
1956	74	15	6	5
1957	76	13	6	5

erally are able to fill their quotas with U. S. students, or they apply in states where hospitals are unable to accept them as interns. In Program VI more than 150 foreign students remained unmatched.

The trend of students to apply to all hospitals of their choice is reflected in Table 2. The average number of applications per student has risen in each of the past five years. Students appear to be giving increased thought to the choice of an internship and are making use of the Matching Program to facilitate handling of their choices.

Table 3 showing the order of choice to which students were matched, indicates the continuing recognition by students of the advantages of the program. Many students rank a hospital first, knowing they have little chance to be matched to it, but know that they will be matched, if possible, while not hurting their chances for their second or third choice hospital. Only 76 per cent received their first choice but 89 per cent were matched to one of their first two choices.

On the other side of the picture, Table 4 shows that hospitals are also receiving their highest choice of students. This year 90 per cent of the students matched were the hospital's first or second choices.

#### Over 60,000 choices

Analysis of Table 3 and 4 shows that the matching program is equating over 60,000 expressed choices by hospitals and students to produce first or second choice matches for both parties in 90 per cent of the cases! Only through the use of a central clearing agency could such a favorable balance result.

Table 5 presents a composite picture of the affiliation, stipend, and number sought statistics of hospitals to which the 1957 interns were matched. Hospitals are classified by the percentage of their internship quotas for all programs which were filled by matching program participants.

In each case the number of positions available is shown as the number sought while the number of

**TABLE 4**  
**Hospitals Ranking of Students With Whom They Were Matched**

Year	Per cent Matched from Rank Group I*	Per cent Matched from Rank Group II	Per cent Matched from Rank Group III	Per cent Other	Total
1956	61	24	11	4	100
1957	71	19	7	3	100

\*If hospital quota is 10, first ten men on list form Rank Group I, numbers 11-20 Rank Group II, etc.

**TABLE 5**  
HOSPITALS CLASSED BY PERCENTAGE MATCHED, INDICATING

		100%			99-50%			49-25%		
		Hosp.	Sought	Matched	Hosp.	Sought	Matched	Hosp.	Sought	Matched
AFFILIATED	Major	42	1182	1182	79	2474	1948	22	542	209
	Minor	12	187	187	15	231	145	11	141	47
	Unaffiliated	60	746	746	114	1506	1032	92	1033	353
	Federal	3	448	448	1	84	81	...	....	....
	Total	117	2563	2563	209	4295	3206	125	1716	609
STIPEND	0 - 50	11	330	330	32	1009	817	6	168	65
	51 - 100	35	689	689	40	1075	819	20	301	112
	101 - 200	47	825	825	98	1634	1135	67	913	316
	201 - Up	19	246	246	35	478	343	28	255	89
	Not Stated	2	25	25	3	15	11	4	79	27
	Federal	3	448	448	1	84	81	...	....	....
	Total	117	2563	2563	209	4295	3206	125	1716	609
No. SOUGHT	1 - 9	25	160	160	41	275	187	45	281	87
	10 - 19	58	774	774	104	1432	1005	61	820	299
	20 - 49	28	874	874	51	1599	1240	17	500	183
	50 - Up	3	307	307	12	905	693	2	115	40
	Federal	3	448	448	1	84	81	...	....	....
	Total	117	2563	2563	209	4295	3206	125	1716	609

\*As indicated in the Internship and Residency Number of the JAMA, August 22, 1956.



# National Intern Matching Program

## AFFILIATION, STIPEND, AND NUMBER SOUGHT

Hosp.	24-1% Sought	Matched	Hosp.	0% Sought	Matched	Hosp.	Total Sought	Matched		
7	86	13	7	49	....	157	4333	3352	Major	A* P F I L I A T E D
5	60	6	12	87	....	55	706	385	Minor	
89	1015	142	251	1933	....	606	6233	2273	Unaffiliated	
...	....	....	...	....	....	4	532	529	Federal	
101	1161	161	270	2069	....	822	11904	6539	Total	
1	13	2	7	61	....	57	1581	1214	0 - 50	S* T I P E N D
13	189	21	76	669	....	184	2923	1641	51 - 100	
64	720	102	157	1127	....	433	5219	2378	101 - 200	
22	227	34	27	188	....	131	1394	712	201 - Up	
1	12	2	3	24	....	13	155	65	Not Stated	
...	....	....	...	....	....	4	532	529	Federal	
101	1161	161	270	2069	....	822	11804	6539	Total	
44	321	49	192	1133	....	347	2170	483	1 - 9	No. S O U G H T
49	641	84	77	916	....	349	4583	2162	10 - 19	
8	199	28	1	20	....	105	3192	2325	20 - 49	
...	....	....	...	....	....	17	1327	1040	50 - Up	
...	....	....	...	....	....	4	532	529	Federal	
101	1161	161	270	2069	....	822	11804	6539	Total	

## *National Intern Matching Program*

these positions filled is shown as the number matched.

Positions in major teaching hospitals continue to attract the largest number of interns while Federal Services have the highest percentage of their quotas filled.

The largest single group of students classified by stipend receive \$101-\$200 per month. However, hospitals offering \$0-\$50 were matched with the largest percentage of their quotas.

Most hospitals—696—offer between 1 and 19 internship positions. Of this group, the 349 hospitals offering 10-19 positions, received 2,162 students. An even larger number, however, are serving internships in 105 hospitals offering 20-49 positions. The Number Sought classification also

shows that the 17 very large hospitals offering 50 or more internships have the greatest success in filling their quotas.

These statistics are just a few of the many that help to present a picture of the pattern of internship seeking activity since it has been centralized through NIMP.

The officers and staff of NIMP are increasingly aware that the success of the program depends on the cooperation received from medical schools, hospitals, and students. The smooth operation and ability to meet deadlines while maintaining accuracy, is possible only through this joint effort. The NIMP gratefully acknowledges this cooperation and looks forward to the opportunity to be of continued service to hospitals and students.

### **El "National Intern Matching Program" para 1957**

Este artículo es un detallado informe, acompañado de tablas estadísticas, sobre el funcionamiento, en 1957, del llamado "National Intern Matching Program" cuya tarea consiste en asegurar una distribución satisfactoria de internos médicos entre los hospitales. Debido al número cada vez mayor de estudiantes y hospitales que se valen de los servicios de la dicha organización, ésta ha empezado recientemente a hacer uso de aparatos electrónicos ("Cerebros" IBM) para obtener más rápidos y exactos resultados. Mediante dichas máquinas, más de 60,000 ofertas y demandas de hospitales e internos fueron tabuladas y comprobadas para el año de 1957.

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Separatas de este artículo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

## *Editorials and Comments*

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### **Walter A. Bloedorn Retires From His Deanship**

**O**N AUGUST 31, 1957 Dr. Walter A. Bloedorn retired from the deanship of George Washington University School of Medicine after having served in that capacity since 1939.

Dr. Bloedorn was born in Platte Center, Neb., November 22, 1886. He took his A.B. and A.M. degrees at George Washington University, and his M.D. at Creighton. He also received a D.Sc. (hon.) from George Washington University in 1948. He did graduate work at New York Post Graduate Medical School, at the National Hospital in London, and at the Allgemeines Krankenhaus in Vienna.

After a term of service in the U.S. Navy during the 1920's, Dr. Bloedorn came to George Washington University School of Medicine in the department of medicine. In 1930 he was made assistant dean, in 1932 director of University Hospital, and in 1939 he was named dean of the school of medicine.

Throughout the 18 years of his deanship, Dr. Bloedorn has continued to serve in the department of internal medicine and has continued to do consultation work in internal medicine. He has also found time to serve as a member of the board of directors of the Hamilton National Bank, a member of the board of trustees of the Gorgas Institute and

Group Hospitalization, and a member of the National Committee on UNESCO (1947-49).

From 1944-46 Dr. Bloedorn was a member of the Executive Council of the Association of American Medical Colleges; in 1946-47 he was president-elect, and in 1947-48, president. He served a second two-year term as member of the Executive Council in 1948-50. Since 1946 Dr. Bloedorn has served as chairman of the Committee on Audio-Visual Education, under whose aegis the Medical Audio-Visual Institute was founded.

For a number of years Dr. Bloedorn has served as a member of the executive committee of the National Board of Medical Examiners and he is currently president of that Board.

At the end of the past college year, Dr. Bloedorn's approaching retirement was honored by a reception given by George Washington University students April 26, by a testimonial dinner May 22, attended by representatives of the university, the District of Columbia and of the Federal government including Homer H. Gruenther of the White House staff, and Supreme Court Justices Felix Frankfurter and Tom Clark. On June 18, a testimonial dinner was given by the Executive Faculty of the school of medicine itself.

An editorial in the *Washington Post* of Tuesday, May 28, 1957 concluded as follows:

*Dr. Bloedorn was a prime mover in obtaining the Federal Government's support which made possible George Washington's and Georgetown University's modern teaching hospitals. He has every reason to be proud of the medical school's progress under his leadership, and his friends find satisfaction in the knowledge that retirement as dean will not end his vigorous advocacy of stronger medical schools throughout the country—adequately financed and prepared to meet the increasing responsibility of supplying more and better trained doctors.*

Dr. Bloedorn has been an important force in improving medical education over the past 30 years, not only in the District of Columbia but in the whole country. May he enjoy for many years the satisfaction and relaxation he so richly deserves. D.F.S.

## **Press Relations at the Annual Meeting**

**F**OR THE PAST several years a small group of medical public relations people has handled press relations at the Association's annual meeting, at the invitation of the Association.

The group is the Board of Governors of the Medical Affairs Section of the American College Public Relations Association. Their assistance has enabled the Association to transmit to the public those newsworthy developments which occur at the autumn session.

Dr. Ward Darley, Executive Director of the Association, has invited the Board to handle press relations at Atlantic City, and the purpose of this editorial is to so advise the membership and also to introduce members of the group, who will be contacting some of you for your cooperation in October. It is hoped that you will find it possible to work in advance with

this group in their preparation of news releases on papers to be presented at AAMC.

Current director of the Board of Governors is Tom Coleman, Assistant to the Vice-Chancellor, University of Pittsburgh, who was re-elected to the position at the recent Omaha meeting of ACPRA. Chairman of the Board is Evan Edwards, Executive Assistant to the Director, University of Colorado Medical Center, Denver.

Other Board members are:

Milton Murray, College of Medical Evangelists

Joe Adams, University of Oregon

Joe Brown, University of Iowa

Mrs. Maurine Twiss, University of Mississippi

Bob Schreiber, University of Oklahoma

While all of the activity at the annual meeting is not of news value, a fair amount of it is, and proper press handling can bring to public attention the activities of the Association in behalf of medical education. *Tom Coleman, Assistant to the Vice-Chancellor, University of Pittsburgh.*

## Foreign Students in the U.S. 1956-57

THE latest report of the Institute of International Education<sup>1</sup> revealed that during the academic year 1956-57 the international educational exchange of this country was greater than ever before. In that year 40,666 foreign students came to the U.S. to study (22,662 as undergraduates, 14,229 as graduates, 3,775 as special or unclassified students) 6,741 foreign physicians came to work as interns or residents in our hospitals; 1,153 foreign teachers or researchers came to accept appointments to American faculties.

Of the 40,666 foreign students 31.8 per cent came from the Far East; 22.4 per cent from Latin America; 14.7 per cent from Europe; 13.4 per cent from North America; 12.9 per cent from the Near and Middle East; and less than 5 per cent from Africa and Oceania. The countries contributing the most students were, in the following order: Canada, China, Korea, India, Japan, Philippines, Mexico, Iran and Greece.

If the 6,741 hospital interns and residents are included with the 3,854 undergraduate and graduate students in medical science, medicine tops the list with 10,595 foreign students as compared with 9,057 for engineering; 8,524 for the humanities; 5,859 for the social sciences; and 5,372 for the natural and physical sciences.

The 6,741 foreign physicians training in U.S. hospitals came from 88 countries. The Philippine Islands contributed 1,332; Canada 576; Mexico 556; Turkey 427; Germany 324; Greece 305; Korea 296; Japan 253; Italy 242; India 203; Iran 183; Cuba 180; and China 153. Of the 6,741 foreign physicians 908 (13.5 per cent) were women. The total for the year represented an increase of 708 physicians over the total of 6,033 reported last year, but the division between interns and residents continued about as last year with 1,988 working as interns; 4,753 working as residents. The 10 hospitals accommodating the largest number of for-

1. "Open Doors 1957—A Report on International Exchange," Institute of International Education. 1 East 67th St., New York 21, N.Y. June 1957.

eign physicians were as follows: Bellevue, NYC 114; Boston City 75; Medical Center, Jersey City 75; Henry Ford, Detroit 66; Kings County, Brooklyn 56; Cleveland Clinic 51; Michael Reese, Chicago 49; Memorial Clinic, NYC 46; Baltimore 44; and Goldwater Memorial, NYC with 42.

The countries contributing the largest numbers to the 1,153 visiting scholars were in the following order: United Kingdom, Japan, Germany, India, France, Canada, China, Spain, Australia, Switzerland. Half of these 1,153 visiting scholars, 488 worked in natural and physical science departments; 212 in various branches of the humanities; 180 in medical faculties; 142 in social science fields; 65 in engineering and 37 in agriculture.

The figures for the U.S. students going abroad are not available for 1956-57, but if the figures for 1955-56 are used it would appear that the number of foreign students now coming to the U.S. is more than four times the number of U.S. students going abroad. (In 1955-56 there were 2,056 U.S. students studying medicine abroad as compared with 1,686 studying the humanities; 1,056 studying social science; 994 studying theology; 528 studying language and literature; 507 studying natural and physical sciences, and 105 studying engineering.)

The United States stands at the present time in a strategic position to make significant contributions to world education. Sober consideration should be given to the question as to whether our educational institutions are fully aware of these new responsibilities and are organizing themselves to meet them effectively.—D.F.S.



# NEWS DIGEST

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## **Meeting of American Medical Writers' Association**

The 14th annual meeting of the American Medical Writers' Association will be held at the Sheraton-Jefferson Hotel, St. Louis, Mo. on September 27-28, under the presidency of Dr. Dean F. Smiley, Secretary of the Association of American Medical Colleges and Editor of this Journal. Eighteen medical writers and authors will address the assembly. A Workshop on Medical Writing, conducted by full-time medical writers will be held September 28.

All members of the Association and other collegiate graduates are invited to attend this meeting. There is no charge for the meeting September 27, but there is a registration fee of \$5.00 for non-members who attend the workshop.

## **Mississippi Valley Medical Society**

The 22nd annual meeting of the Mississippi Valley Medical Society will be held at the Sheraton-Jefferson Hotel, St. Louis, Mo., September 25-27. Over 40 clinical teachers from medical schools will conduct the assembly, wherein advances in medicine will be presented. The program will include six panel discussions: September 25, obstetrics; burns: September 26, the acute surgical abdomen; peptic ulcer: September 27, chronic diseases in infancy and childhood; headache.

## **Department of The Army**

The U. S. Army Medical Service celebrated its 182nd anniversary on July 27. The Service began when the

Hospital Department of the Army was set up in 1775 to provide medical support for the colonists in the Revolutionary War.

First award of silver Army aviation wings to 50 Army Medical Corps officers stationed around the world in assignments ranging from research to clinical practice, marks the newest development in the expanding Army aviation medicine program. Distribution of the new badge is expected to be made the latter part of 1957. Officers designated to wear these wings already have non-crew member flying status and pay and perform clinical duties for non-flying personnel too. They are officially recognized as being qualified to conduct medical examinations and to furnish medical advice related to Army aviation. They receive their aviation medical training at the Air Force School of Aviation Medicine, Randolph Air Force Base, Texas or at the Navy School of Aviation Medicine, Pensacola, Fla.

## **National Foundation For Infantile Paralysis Fellowships**

September 1 and December 1 are the current deadlines for applications to the National Foundation for Infantile Paralysis for postdoctoral fellowships in research, academic medicine or in the clinical fields of psychiatry, rehabilitation, orthopaedics, the management of poliomyelitis and preventive medicine. Applications for fellowships in the medical associate fields of social science, health education, physical therapy teaching and occupational therapy teaching should also be filed by these dates. A spring date of March 1, is also provided.

### **Meeting of American Psychosomatic Society**

The American Psychosomatic Society will hold its annual meeting at the Netherland Hilton in Cincinnati on Saturday and Sunday, March 29 and 30, 1958. The Program Committee would like to receive titles and ab-

stracts of papers for consideration for the program, no later than November 15. The time allotted for presentation of each paper will be 20 minutes. Abstracts in octuplicate should be submitted for the Program Committee's consideration to Theodore Lidz, M.D., Chairman, 551 Madison Avenue, New York 22, N. Y.

## **College Briefs**

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### **Albany**

The following promotions have been made for the forthcoming year: Dr. JAMES H. CULLEN, Dr. WILLIAM P. NELSON, III and Dr. KENNETH B. OLSON, all of whom were promoted from assistant professor to associate professor in the department of medicine. Dr. Nelson is also assistant dean, while Dr. Olson has the additional capacity of associate professor and head of the sub-department of oncology. Dr. JOHN A. NELSON has been promoted to associate professor of surgery.

Two Albany physicians, Dr. ROBERT D. WHITFIELD and Dr. WILLIAM A. MILNER have been appointed sub-department heads in the department of surgery. Dr. Whitfield, an associate professor of surgery, will head the sub-department of neurosurgery. Dr. Milner, who has been named associate professor of surgery, will head the sub-department of urology.

### **Boston**

Dr. F. MAROTT SINEX has been appointed professor and chairman of the department of biochemistry, while Dr. EDWARD WARREN PELIKAN is joining the staff of the department of pharmacology and experimental

therapeutics as an associate professor.

### **Buffalo**

Dr. PAUL LONGSTRETH has been appointed assistant dean on a full-time basis and chairman of the Admissions Committee. Dr. Longstreth is replacing Dr. OLIVER P. JONES, chairman of the anatomy department.

### **Chicago**

Dr. ALDO A. LUISADA, director, division of cardiology, is currently on a lecture tour of five South American countries, by invitation from the heart associations of Peru, Chile, Argentina, Uruguay and Brazil. Twenty-two lectures will be given in such major cities as Lima, Santiago, Buenos Aires, Montevideo, Sao Paulo and Rio de Janeiro.

### **University of Chicago**

Dr. CHARLES B. HUGGINS, professor of urology and director of the Ben May Laboratory for Cancer Research, has been presented an honorary doctor of science degree by Torino (Italy) University and elected honorary president of the Italian Urological Association, both in recognition of his contributions to research in the control of cancer by hormones.

The following promotions have been made: Dr. ROBERT W. WISSLER has been named professor in the department of pathology; Dr. ALBERT DORFMAN has been appointed professor in the department of pediatrics. Dr. Dorfman was also made director of the LaRabida-University of Chicago Institute. This Institute was recently established for patient care, teaching and research at LaRabida Sanitarium, now an affiliate of the university. Dr. JAMES W. MOULDER has been elevated to the rank of professor in the department of microbiology and Dr. BIRGIT VENNESLAND has been made a professor in the department of biochemistry.

### **Cincinnati**

Dr. EDWARD A. GALL, professor of pathology and head of that department, has been named editor-in-chief of the American Journal of Pathology, official publication of the American Association of Pathologists and Bacteriologists.

### **Duke**

Plans for a major scientific attack on the problems of aging will be realized with the establishment on the campus of a Regional Center for Research on Aging. First of its kind in the nation, the center will be supported in part by a Public Health Service grant expected to total more than \$1.5 million over a five-year period. The center will serve as a pilot project in the Southeast. Dr. EWALD W. BUSSE, chairman of the psychiatry department and of the Duke University Council on Gerontology, will be the principal investigator for the center's research program.

### **Emory**

Dr. JOHN D. MARTIN, clinical professor of surgery, has been named chairman of the department of surgery, effective September 1. Dr. Martin will fill the vacancy created by the resignation of Dr. JOHN M. HOWARD.

Dr. CARL PFEIFFER has been promoted from acting director to direc-

tor of the division of basic health sciences and Dr. JAMES A. BAIN has been promoted from professor of pharmacology to chairman of that department. Dr. WILLIAM H. GALVIN, assistant professor of surgery, has been named to the new administrative post of chief of anesthesiology, effective September 1. In his new position, Dr. Galvin will serve as a section chief in the department of surgery, and will direct patient care, teaching and research in anesthesia.

### **Georgia**

A grant from the National Heart Institute of the Public Health Service in the amount of \$300,297 has been awarded to WILLIAM F. HAMILTON, professor of physiology, and RAYMOND P. AHLQUIST, professor of pharmacology. This money is for the purpose of continuing the postgraduate Cardiovascular Research and Training Program for the next six years. The program supported by this grant is to provide postdoctoral training in the use and application of modern research methods for studying the heart circulation.

### **Hahnemann**

Dr. ARTHUR W. WASE, assistant professor of biological chemistry, has just returned from a 10-month stay at the University of Brussels where, as Fulbright professor, he conducted a seminar in the utilization of radioisotopes for more than 80 European doctors and also a short course for European nurses and technicians.

Dr. JOHN H. MOYER has been appointed professor and head of the department of medicine. Dr. Moyer was formerly chief of the department of medicine and pharmacology at Baylor University School of Medicine.

### **Jefferson**

Dedication ceremonies were held in July for the new Strickler-Root Memorial Research Laboratories of the department of obstetrics and gynecology covering one-half of the ninth floor of the college. The laboratories, for expanded research, in-

cluding cancer study, sterility and studies of the new born, provide sections for pathology, microbiology, endocrine studies and biochemistry.

Formal opening was also held in July for a newly constructed radiation therapy division in Jefferson Medical College Hospital. The new unit provides rotational cobalt teletherapy apparatus, and modern X-ray therapy apparatus, with facilities for treatment, research and a physics laboratory.

### **Louisville**

Dr. KATHARINE DODD has been appointed distinguished professor of pediatrics. Dr. Dodd is retiring as chairman of the department at the University of Arkansas, which she has served for the past five years. Previous to this Dr. Dodd taught at the University of Cincinnati for nine years after teaching pediatrics at Vanderbilt for 18 years.

### **Maryland**

Over 200 doctors will sail on November 30, to participate in a Caribbean cruise, prescribed for study, relaxation and rest. The "floating seminar" will constitute 15 hours of study credit acceptable in the postgraduate requirements of the American Association of General Practitioners. Conducting the cruising classrooms will be Dr. R. ADAMS CROWLEY, associate professor of thoracic surgery, Dr. MARTIN HELRICH, professor of anesthesiology, Dr. JOHN YOUNG, professor of urology and head of the division of urology, Dr. LEONARD SCHERLIS, associate professor of medicine and Dr. MELCIJAH SPRAGINS, associate in pediatrics. The cruise has been arranged by the school's postgraduate committee on courses, chairmanned by Dr. HOWARD M. BUBERT.

### **Michigan**

Dr. FREDERICK A. COLLIER, chairman of the department of surgery, retired July 1, after serving 27 years in that position. Dr. Collier, however, will continue on the medical faculty as a teacher, practitioner and consult-

ant. He will teach a special course in the history of medicine which he originated some years ago.

### **Mississippi**

Dr. THOMAS J. BROOKS, professor of preventive medicine and chairman of the department, has been appointed an assistant dean. Dr. Brooks will handle student affairs in addition to his duties as department chairman.

The psychiatry department has named two new assistant professors. They are Dr. H. WILLIAM GILLEN and GILBERT R. GREDLER.

Assuming his duties as assistant professor of medicine in July, Dr. FREDERIC C. McDUFFIE will head the division on immunology and rheumatic disease.

### **Missouri**

The school of medicine has been fully accredited by the Council on Medical Education of the American Medical Association as a complete four-year school leading to the degree of Doctor of Medicine. The school was also voted full membership in the Association of American Medical Colleges.

### **New York Medical College**

Dr. ARTHUR V. JENSEN has been appointed assistant dean. Dr. Jensen has been associate professor in the department of anatomy for the past four years and will continue in that position also.

### **Northwestern**

Dr. EARL E. BARTH, professor of radiology, has been named chairman of the department of radiology. Dr. Barth succeeds Dr. EDWARD L. JENKINSON, who is retiring as chairman of the department.

### **S. U. N. Y. Syracuse**

Dr. HAROLD B. HOUSER, assistant professor of medicine, has been selected as one of a group of United States observers of an Asiatic flu epidemic in Chile. The group was organized by the Influenza Commission of the Armed Forces Epidemiological Board and the study is under aus-

pices of the Pan-American Sanitary Board. Dr. Houser, who left for Chile August 7, has been conducting research on respiratory infections at the college for several years.

#### **Vermont**

Dr. WILHELM RAAB, professor of experimental medicine and director of the Clinical Cardiovascular Research Unit, has received a Fulbright Research Award to spend nine months, beginning October 1, at the Medical Clinic of the University of Innsbruck, Austria. He will carry out epidemiological studies concerning the neurovegetative and cardiac dynamic status of physically highly conditioned mountain dwellers of the Austrian Alps as compared with

average motorized, non-exercising Americans.

#### **Seton Hall**

Three new appointments have been made for the forthcoming academic year: Dr. PASQUALE JAMES COSTA, formerly at Harvard University School of Medicine, has been appointed associate professor of pharmacology; Dr. GEORGE A. CONDOURIS will be an assistant professor of pharmacology and Dr. SHELDON B. GERTNER has been appointed assistant professor of pharmacology. Dr. Condouris was on the faculty of the Cornell University Medical College and Dr. Gertner had been on the faculty of Columbia University.

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#### **WILLIAM E. COTTER**

William E. Cotter, counsel for the Union Carbide Corporation, died August 15, after a brief illness.

Mr. Cotter was born in Chicago and graduated from the University of Notre Dame in 1913 with an LL.B. degree. He was actively interested in the National Fund for Medical Education and the Arthritis and Rheumatism Foundation, and was a director of the Citizens Committee for the Hoover Report.



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# Audiovisual News

## **Automation and Education**

Teacher and plant shortage coupled with swelling school enrollments in the next two decades necessitates technological solution. The solution is being implemented by the Ford Foundation through its support of the audio-visual approach to teaching. Ford Foundation influence on automation with AV devices "will be greater and will make itself felt in a much shorter time than anything heretofore experienced, including World War II." Thus does James D. Finn review proposals for automatizing the classroom through audio-visual devices in the second of a series of articles entitled "Automation and Education."

Over \$20 million have been invested by the Ford Foundation and its subsidiaries on educational television in less than four years. This is probably equal to or more than the annual amount spent on audio-visual education in the public schools of the United States, says Dr. Finn.

If history is any guide the Ford investment will have a marked effect on education. Dr. Finn points out that as the result of previous educational research support (1930-40) by the Payne Fund and the Rockefeller Foundation the audio-visual field developed and grew as it never had before. The Ford investment will have a greater effect for two or three reasons. First, Ford has expended more money. Second, the money has been made available in a shorter

period of time. Third, and most important, previous support had no specific program for education but simply made money available for research, development, and the education of personnel. The Ford Foundation, on the other hand, has established a goal—"automatizing the classrooms of the nation . . . and has made grants for both research and development programs in order that this goal may be reached."

## **Medical Illustrators to Meet**

The twelfth annual meeting of the Association of Medical Illustrators will be held at the Sheraton-Mount Royal Hotel, Montreal, October 7-9. Topics on the agenda include: technical papers such as "Perception," "Self-Curing Acrylic in Medical Illustration" and "Semi-Dry Brush and Airbrush on Scratch Board;" and professional problems such as "Do we need a code of fair practice to supplement our Code of Ethics?" Speaker for the banquet is Dr. L. G. Stevenson, dean of medicine and professor of the history of medicine, McGill University.

Members of the Association of Medical Illustrators desiring to attend should apply to the Chairman of the Local Program Committee of the Association of Medical Illustrators at Queen Mary Veterans Hospital, Montreal 29, Que., Canada.

## **Student Participation and Film Use**

A test on a film's content before, during, or immediately after the showing is a profitable teaching technique, especially if the students are immediately informed on the test results. Such verbal participation and

\*Finn, James D. "Automation and Education: II. Automatizing the Classroom—Background of the Effort." *Audio-Visual Communication Review*, Vol. 5, No. 2; Spring 1957.



## TODAY'S COLLEGE GRADUATES HAVE BIGGER FAMILIES—PLANNED BIG

**E**VEN COLLEGE GRADUATES, traditionally the low-birthrate group, are having big families today. Planning them bigger. A survey just completed among 29,494 graduates of 178 colleges shows that the men of the class of '45 have families averaging 70% larger than those of the class of '36 in the ten years after graduation.<sup>1</sup>

**Want big, but spaced, families** — When these wives come to you for contraceptive advice so that they can space their large families, they want to be sure that the recommended method really gives them protection. You can give them this assurance with diaphragm and jelly — the preferred technique for women of high parity. These patients may not be as well protected by use of jelly alone, a method that seems better suited to low-parity women. In urban population groups using the diaphragm-jelly method, unplanned pregnancy occurred only "once in ten to 15 years."

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1. College Study Report: Population Bulletin 11:45 (June) 1955. 2. Tietze, C., in Dickinson, R. L.: *Techniques of Conception Control*, ed. 3, Baltimore, Williams & Wilkins Co., 1950, pp. 55-57.

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knowledge of results greatly enhances learning. This is a general conclusion of William H. Allen\* in reviewing the research on film use.

Allen reviewed the experimental studies conducted with films that employ participation techniques as a variable of use. He organized these techniques into five categories: (a) verbalization of response, (b) perceptual-motor responses, (c) knowledge of results, (d) mental practice, and (e) note-taking. Of the 26 comparisons in the studies found, 13 favored participation and only two favored nonparticipation. The remaining 11 comparisons showed participation to be at least as effective. Only "note-taking" was shown to be of doubtful value.

The results revealed that "verbalization of response" and the furnishing of "knowledge of results" appeared to be the most effective participation techniques.

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\*Allen, William H. "Research on Film Use: Student Participation." *Audio-Visual Communication Review*, Vol. 5, No. 2; Spring 1957.

### **AV Conference of Medical and Allied Sciences**

The fifth annual conference of audio-visual representatives from medical and allied organizations was held on July 22 in the Morrison Hotel, Chicago. Twelve national non-profit associations or organizations are represented at the conferences which are held for the purpose of exchanging AV information between associations concerned with audio-visual problems on a national scale.

The conference was held during the National Audio-Visual Trade Show and Convention. Attendance at the equipment show and other concurrent meetings of special interest groups was 2500.

Included on the agenda of the medical and allied group was a special report on the use of television for instruction at the University of Texas School of Dentistry, presented by Dr.

John V. Olson, Dr. Heinz O. Beck, and W. E. Morrison.

New officers elected for the coming year were: Chairman—J. Edwin Foster, Association of American Medical Colleges; Vice-Chairman—Helaine Levin, American Dental Association; and Secretary-Treasurer—Daryl I. Miller, American Medical Association.

### **How-to-do-it Films**

Descriptive information will be given next month on five short physiology films produced at Western Reserve University School of Medicine. The films, designed to increase medical students' skill in preparing for cardiovascular experimentation, are:

"Spleen—Recording Changes in Size"

"Cannulation of the Trachea"

"Cannulation of the Carotid Artery"

"Stimulation of the Vagus Nerve"

"Sciatic Nerve — Exposure and Stimulation"

The films will be available from the Medical Audio-Visual Institute. (\$4 for one; \$2 for each additional one ordered at the same time.)

### **FILM REVIEWS**

#### **Structure and Function of the Vestibular Apparatus**

20 min., sd., color, 16 mm.

The role of the otocysts and visual apparatus in maintaining balance and position sense is demonstrated in the crayfish by removal of one or both of these organ complexes. The influence of dynamic external forces is shown by removal of the otocysts, replacing them with iron filings, and placing an electromagnet near the animal. The hydrodynamics of the intact semi-circular canals are demonstrated with a rotating transparent tubular ring and diagrams. Under rapid rotation the reflex reactions of a normal frog are contrasted with their absence when the vestibular center has been destroyed. A rat running in tight circles dramatizes the effect of labyrinthitis. In humans,

# Ballenger and Ballenger— Diseases of the Nose, Throat, Ear

By **HOWARD CHARLES BALLENGER, M.D., F.A.C.S.**

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Northwestern University Medical School, Chicago

and **JOHN JACOB BALLENGER, B.S., M.S., M.D.**

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Students will be especially appreciative of this present-day application of modern neurologic principles. Dr. Merritt presents diseases of the nervous system as an integral part of internal medicine. The entire subject is described clearly in general medical terms. Terminology peculiar to the specialty has been avoided in order that the material might be grasped readily by those not too familiar with the subject. Full consideration is given to common diseases of the nervous system and to established methods of treatment. "Highly recommended to medical students and practitioners."—*Southern Medical Journal*.

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*New 13th Edition.* The many essential facts relative to surgical anatomy are covered in detail in this book. As an aid to students there is included much material of clinical value which reveals many surgical dangers and pitfalls. Although many changes and additions were made for this *new edition*, the original text and design of Sir Frederick Treves is retained. Accuracy and current usage remain the criteria on which the revision has been based.

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# ANATOMY IN SURGERY

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**First Edition**

**Published 1951**

**Fifth Printing 1956**

Intended to narrow the gap between freshman anatomy and operative surgery, this book is the culmination of the author's long experience in teaching gross and topographic anatomy.

Particular attention has been given to accuracy in the anatomic details, both in the text and in the illustrations. All of the drawings are original; many are presented in their dimensional views; and all are analogous to the text. Hundreds are in two, three or four colors.

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**First Edition**

**Published 1956**

**Second Printing 1957**

This treatise is strongly based in the belief that in surgical diagnosis it is particularly advantageous to the student to have a well organized plan or method to guide him, and that such plan must be simple, concise and workable.

The method suggested here satisfies these requisites and has served the author well for the past twenty-five years. It consists of the following steps: 1. A well-taken history; 2. A careful evaluation of the symptom complex; 3. A properly conducted physical examination; 4. Consideration of pertinent laboratory data.

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By

**J. GARROTT ALLEN, HENRY N. HARKINS, C. A. MOYER and  
JONATHAN E. RHOADS**

**First Edition**

**Published April 1957**

**Additional Chapters by**

W. E. ADAMS, PAUL V. HARPER, University of Chicago; W. A. ALTEMEIER, W. R. CULBERTSON, University of Cincinnati; J. BARRETT BROWN, LOUIS T. BYARS, OSCAR P. HAMPTON, FRED C. REYNOLDS, Washington University; OLIVER COPE, FRANCIS D. MOORE, WILLIAM H. SWEET, Harvard Medical School; ROBERT D. DRIPPS, WILLIAM T. FITTS, JULIAN JOHNSON, University of Pennsylvania; JOHN H. GIBBON, JR., THOMAS F. NEALON, JR., Jefferson Medical College; K. ALVIN MERENDINO, University of Washington; JOHN M. HOWARD, Baylor University; DWIGHT J. INGLE, May Laboratory of Cancer Research; O. C. JULIAN, University of Illinois; J. LAPIDES, University of Michigan; HORACE J. Mc CORKLE, University of California; MICHAEL NEWTON, University of Mississippi; MARK M. RAVITCH, Columbia University.

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nystagmus and vertigo are shown to occur after both rotatory movement and irrigation of the ear canal with cold water.

The dynamic histology and mechanics involved in the regulation and coordination of equilibrium and locomotion, and the effects of external stimuli upon these functions are accurately explained and demonstrated. The organization of the materials and the methods of visualization have been well conceived and executed, although more effective closeups would have added force, notably in the sequence on eye movements.

For students of the medical sciences, the film will be informative and provide stimulus for discussion. G.U.W. with KUMC Panel, 1957.

**Audience:** Students of medicine and physiology, interns, ENT residents.

**Production Data:** **Producers:** Department of Medical Illustration, University of Washington School of Medicine; **Authors:** Richard J. Blandau, M.D., Prof. of Anatomy, Newton B. Everett, Ph.D., Asst. Prof. of Anatomy, University of Washington. **Distribution:** The Film Center, University of Washington, Seattle 5, Washington, Loan.

#### **Vitamin Deficiencies in Pregnancy**

35 min., sd., color, 16 mm., Released U.S.A., 1957.

An introduction presents a normal delivery, followed by a flashback to some of the nutritional problems pregnancy may bring. The role of thiamine is shown with phycomyces; of nicotinic acid with growth of ducklings; these are contrasted with changes in adult birds. A chart shows relationships of vitamin intake and effects upon the host mother and the fetus. The four levels of deficiency effects derived from a mass animal experiment are outlined in animation and demonstrated in rats; these are (1) Sterility, (2) Fetal deaths, with abortion or absorption, (3) Malfor-

mations, and (4) Functional disorders. Comparable data in humans are adduced from Holland's 1944 "starvation winter" and the siege of Leningrad. The conclusion points to research yet to be done.

The film represents the synthesis of large scale animal experiments contrasted with the available human data, and seeks to derive broad conclusions regarding quantitative and qualitative vitamin deficiencies. The film cautiously walks the line between relatively decisive animal studies and very indecisive comparable human observations. Productionally, the film is a tour de force, and demonstrates high film competencies rarely seen. The gross pathologies of uteri, monsters, and mice litters are uniquely handled. Rare shots and expert handling of visuals are frequent.

For students of pathology, obstetrics and nutrition, the film in whole or in part will be provocative and will stimulate discussion. A brief manual supplies reference data. D.S.R. with KUMC Panel, 1957.

**References:** (1) de Watteville, H., Jurgens, R., Pfaltz, H., Schenker, N.P., Fust, B., Borth, R., Pellmont, B., Lunenfeld, B., Schweiz. med. Wschr. 84, No. 30, 875-83 (1954). (2) Pfaltz, H., Severinghaus, E. L. Effects of Vitamin Deficiencies on Fertility, Course of Pregnancy, and Embryonic Development in Rats. Amer. Jour. OB & GYN, 72, No. 2, August 1956.

**Audience:** Students of medicine, nutrition.

**Production Data:** **Sponsors:** F. Hoffmann-La Roche & Co., Ltd., Basle, Switzerland and Nutley, N.J.; **Scientific Advisors:** H. de Watteville, M.D. (Geneva), Rudolph Jurgens, M.D. (Basle), Hilde Pfaltz, M.D. (Basle); **Producers:** Norman P. Schenker, M.D., Washington, D.C.; **Camera:** Ady Lumpert; **Animation:** August Wyler. **Distribution:** F. Hoffmann-La Roche Co., Inc., Roche Park, Nutley 10, N.J., Loan.





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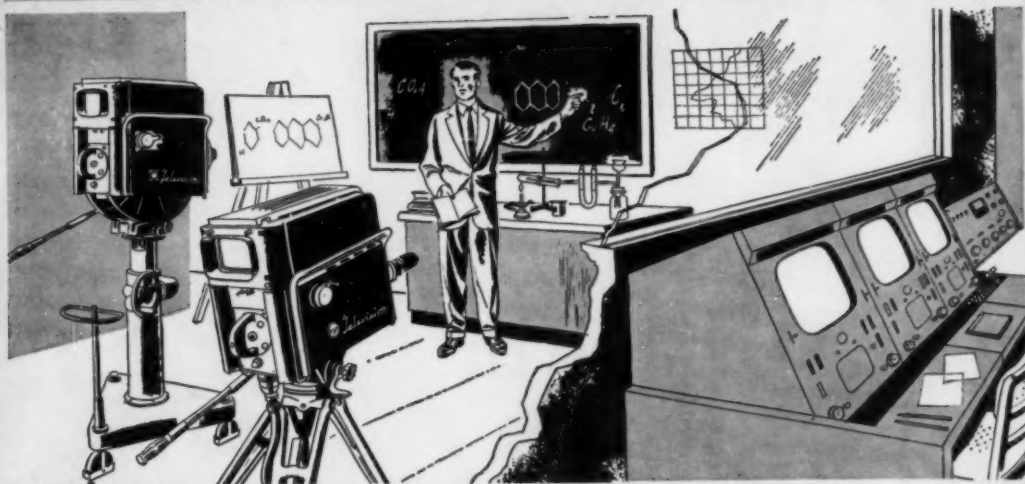
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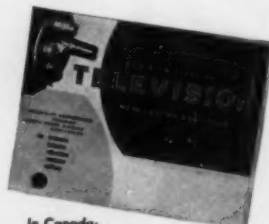
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1. Perkoff, G. T., et al.: *J. Clin. Endocrinol.* 14:531 (May) 1954. 2. Abramson, D., and Reid, D. E.: *J. Clin. Endocrinol.* 15:206 (Jan.) 1955. 3. Eichner, E.; Waltner, C.; Goodman, M., and Post, S.: *Am. J. Obst. & Gynec.* 71:1035 (May) 1956.

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# Book Reviews

## Cold Injury

Edited by **M. Irene Ferrer**. Published by Josiah Macy Jr. Foundation, 1957. 371 pp. with index. \$5.95.

This volume represents one of the series of the Josiah Macy, Jr. Foundation, and contains the transactions of the Fourth Conference on Cold Injury, held November 7-9, 1955.

The volume is interesting not only from the information it offers, but also as another example of the valuable contribution of the Josiah Macy, Jr. Foundation Conference Program.

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This current issue, relating to "Cold Injury", particularly pertains to war-time injuries, secondary to frostbite and exposure, and current development of hypothermia in clinical medicine has brought the subject from the battlefield to the civilian hospital.

The contents of the volume would prove of interest to all military physicians, and civilians particularly interested in peripheral vascular disease and general problems of hypothermia.

E. Grey Dimond, *Kansas*

## Annual Review of Medicine, Volume 8, 1957

David A. Ryland, Editor and William Cregar, Associate Editor, Annual Reviews, Inc., Palo Alto, California.

The present volume of the "Review" offers the following articles:

1. Adrenocortical Hormones and the Management of Infection
2. Infectious Diseases (Control of Infection: Biological and Chemical Means of Prophylaxis)
3. Diseases of the Gastrointestinal Tract
4. Diseases of the Cardiovascular System (Medical)
5. Diseases of the Cardiovascular System (Surgical)
6. Medical Diseases of the Kidney
7. Diseases of the Reticulo-Endothelial System and Hematology (The Red Cell and Some of its Problems)
8. Nutrition and Nutritional Diseases
9. Endocrinology
10. Allergy and Immunology
11. Obstetrics
12. Diseases of the Nervous System
13. Psychiatry
14. Diseases of the Respiratory System
15. Pneumoconiosis, Silicosis, and the Physics and Chemistry of Dust
16. Hemodynamic Effects of Ether, Cyclopropane, or Barbiturates
17. Radioactive Isotopes in Medicine
18. Connective Tissue (Collagen) Diseases
19. Actions of Heparin Other than Those on Coagulation
20. Special Therapeutics (Helminthic Diseases)
21. Tolerance to and Physical Dependence on Opiates, Barbiturates, and Alcohol
22. Experimental Retrolental Fibroplasia
23. Pediatrics

The usual high standard of former issues for reporting medical developments has been maintained in this volume. Contributors are dependably expert, as always.

The first 320 pages offer the expected essays on advances made in the several fields since the last review; these essays are very competent presentations by





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authors obviously practiced in their specialties. The last 150 pages present the very welcome "little monographs" that are beginning to characterize the series. These expositions cover a field rather than a year; hence they reach back for material without regard to time of publication. An example is "Pneumoconiosis, Silicosis, and the Physics and Chemistry of Dust" by Davies of London who cites literature back to 1926. Another good example of this type of little monograph is "Radioactive Isotopes in Medicine" by Rosenthal and Lawrence, who treat the subject from its beginnings.

Henry R. Jacobs, *Northwestern*

#### **Gestation, Transaction of the Third Conference (1956)**

Edited by Claude A. Villee, Josiah Macy, Jr. Foundation, New York, 1957. 253 pp.

The subject of the transactions of the third conference on gestation, organized by the Josiah Macy, Jr. Foundation, is the role of the endocrine glands in pregnancy. The style of presentation, an informal detailed account of the discussions, is one that maintains the interest of the reader, but makes the text rather difficult to use for reference.

The subject of the maternal hormones in pregnancy is introduced by Dr. Gregory Pincus, who points out some of the major unsolved problems. Dr. M. X. Zarrow emphasizes the changes in serum progesterone levels in the rabbit and other animals, and the related excretion of pregnanediol in the pregnant woman and monkey. Relaxin is considered at some length and it is concluded that relaxin is now well-established as a hormone of pregnancy. Dr. Eleanor Venning reviews older work on the excretion of hormones in pregnancy and describes recent work on the activity of the adrenal cortex. Dr. Pincus describes some interesting experiments on steroidogenesis in perfused human placentas.

Another series of discussions is directed at the interrelationships between maternal and fetal hormones. Here species differences become particularly apparent, particularly when passage of hormones across the placenta is under consideration. Dr. Alfred Jost discusses the activity of the fetal thyroid, testis, and the endocrine regulation of glycogen in the fetal liver. Dr. Dorothy Price,

utilizing the technique of organ culture, studies the effects of fetal sex hormones on sex differentiation. Dr. Lemen Wells considers the effects of fetal hormones on fetal growth, and Dr. Roy Greep discusses the interrelation of pituitary function (both of mother and fetus) and pregnancy.

Other papers of interest are those of Dr. Curt Richter, pointing out a 13- to 14-day cycle in the rat which is manifested under certain conditions of stress; Dr. Claude Villee tracing the action of estradiol to a specific effect on isocitric dehydrogenase; and a discussion of the etiology of gonadal agenesis and sex reversal by Dr. Emil Witschi.

Andrew A. Ormsby, *Texas*

#### **Practical Pediatric Dermatology**

Morris Leiden, M.D. C. V. Mosby Co., St. Louis, 1956.

This is a very complete book covering all of the skin conditions seen in infants and children. Although it is concise, it is clear and thorough in its coverage as a text and reference book. There are 413 pages of text and 19 pages of good index.

The book is well organized and illustrated. In the 115 figures there are really 280 photographs. These are clear photographs well illustrating the skin conditions they represent. For instance there are 13 photographs of types of hemangiomas.

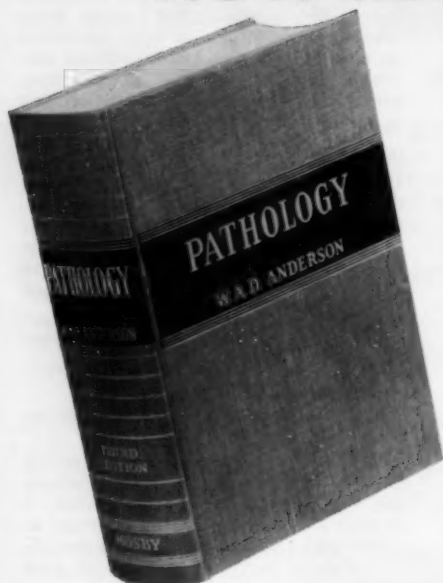
Each of the 14 chapters is headed by a short title abstract of the subjects covered with page numbering for specific reference. There are 41 tables included, which summarizes concisely and clearly the material covered. These tables are particularly valuable because of their condensation of material. As an illustration one table covers a summary of the hereditary congenital dysplastic nevroid and neoplastic processes covering 64 conditions.

Also of special interest is the annotated formulary which covers 101 useful preparations. These 15 pages are colored blue for easy reference. There is also a good glossary of lay and technical terminology.

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**Bainbridge and Menzies, Essentials of Physiology (ed. and rev.)**

H. Hartbridge and J. L. D'Silva. 10th ed. Longmans, Green, and Co., London and New York.

The authors have approached the preparation of this text with excellent intentions: to write a physiology text sufficiently detailed for use in medical courses, but not so large as to have adverse psychological effect on the student. Whether they have achieved such purpose depends upon one's point of view on what constitutes an adequate presentation. The reviewer feels that they have not.

The text covers quite as much material as other books in medical physiology. It is indeed much shorter than the others, and obviously the brevity is at the expense of depth. With the possible exception of the central nervous system, the amount of deletion is quite uniform in all fields. Chapters are short and numerous. In every case, the discussion ends at about the point where the reviewer would expect the medical students' interest to begin. To make matters worse, the authors have included much that is ordinarily relegated to anatomy, histology, and biochemistry.

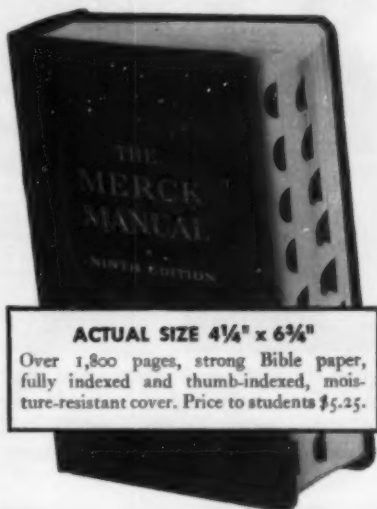
Pedagogically, the text is also something of a failure. This is for two main reasons: (1) the material used, especially some of the illustrations, is antiquated and not in keeping with modern trends in teaching of physiology, and (2) the sequence of presentation is an unfamiliar one, and no reasonable attempt has been made to unify the science. For these reasons, the reviewer doubts the utility of the book for any teaching, much less that of medical students.

There remains a possibility that these criticisms are a function of point of view, and that there may be teachers of physiology who would find the book useful. If so, we hope that they insist that in the next edition, the diagram of "connections necessary to record Leads I, II, and III of an electrocardiogram" be changed to exclude salt water troughs for the immersion of hands and feet. An astute but uninformed student might get the impression that medical science still exists in such an era.

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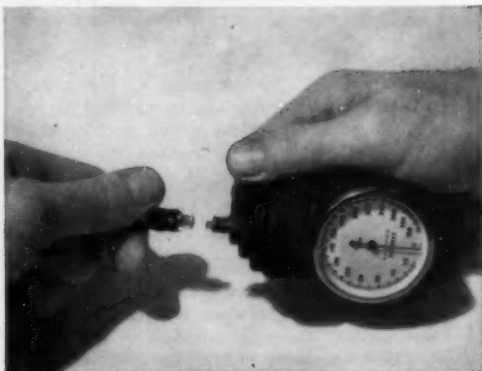
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